Intel Active Management Technology v7.0 Administrator's Guide

Overview

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Management

AMT Redirection (SOL/IDE-R)

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If you purchased a DELL™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Product Overview

Intel Active Management Technology (Intel AMT) allows companies to manage their networked computers easily.

- **Discover** computing assets on a network, regardless of whether the computer is turned On or Off – Intel AMT uses information stored in the non-volatile system memory to access the computer. The computer can be accessed even while it is powered Off (also called out-of-band or OOB access).
- Remotely **repair** systems after operating system failures – In the event of a software or an operating system failure, Intel AMT can be used to access the computer remotely for repair purposes. IT administrators can also detect system problems easily with the assistance of Intel AMT's OOB event logging and alerting.
- **Protect** networks from incoming threats while keeping software and virus protection up-to-date across the network.

Software Support

Several Independent Software Vendors (ISVs) are building software packages to work with Intel AMT features. Hence, this provides IT administrators many options to remotely manage networked computer assets within a company.

Features and Benefits

Intel AMT	
Features	**Benefits**
Out-of-band (OOB) access	Allows remote management of platforms regardless of system power or operating system state.
Remote troubleshooting and recovery	Significantly reduces onsite visits, increasing the efficiency of IT technical staff.
Proactive alerting	Decreases downtime and minimizes repair times.

New Features of Intel vPro Technology

Intel AMT 7.0

- Host Based Provisioning : Easy deployment of AMT capable units by the customers.
- Communication Proxy Support : Allow AMT communication to an external network (for example: IT outsourced to offsite party)

MEFW Rollback

Enable downgrading of MEFW on vPro systems to enable customers to more easily lock on BIOS revisions.

AT-p 3.0

- WWAN (3G) Support for AT-p (Ericsson wireless on NB only)
- AT-p suspend / resume commands for temporary disablement
- AT-p authentication on S3 resume (optional)

Add support for Desktop Workstations

Other New Features (related to MEFW)

Support for LAN ARP

ME answers LAN ARP request (IPV4) & Neighbor Discovery packets (IPV6) by not waking and instead notifying the console system in Sx.

- New Win7 LAN requirement
- Only for 5MB SKU and in Power Policy 2

Deep S4/S5

This is automatically disabled when AMT is provisioned in PP2.

Identify Protection Technology (IPT)

Enable One Time Password based secure login and web transactions via ME-based authentication.

Client System Requirements

The client system referred to in this document is based on the Intel 6 Series Chipset Family/Intel PCH platform, and is managed by Intel Management Engine. The following firmware and software requirements are required for the installation and setup before the Intel Management Engine can be configured and run on the client system.

- An SPI flash device programmed with Intel AMT 7.0 flash image integrating BIOS, Intel Management Engine and GbE component images.
- BIOS set up with Intel AMT enabled, can access MEBx setup from F12 menu.
- To enable all the Intel Management Engine features within Microsoft Operating System, the device drivers (Intel MEI/SOL/LMS) must be installed and configured on the client system.

* Information on this page provided by Intel.

NOTE: The Intel Management Engine BIOS Extension (MEBx) is an optional ROM module provided to Dell™ from Intel that is included in the Dell BIOS. The MEBx has been customized for Dell computers.

Out of Box Experience

The following materials are available with an Intel Active Management Technology (Intel AMT) computer:

- Factory installation
  - Intel AMT 7.0 is shipped in the factory-default state from Dell factories.
- Setup and Quick Reference Guide
  - Intel AMT overview
- Backup media
  - Firmware and critical drivers are available on the Resource CD.

See the *Administrator Guide* for detailed information about Intel AMT available on **support.dell.com\manuals**.

Operational Modes

In Intel AMT 5.0 and earlier versions, there were two operational modes – SMB and Enterprise. In Intel AMT 6.0 and AMT 7.0, their functionality has been integrated to provide the same functionality previously available in Enterprise mode.

The new configuration options are:

- Manual Setup and Configuration (available for SMB customers)
- Automatic Setup
- Configuration

Setting	Intel AMT 5.0 and under Default		Intel AMT 6.0 / 7.0 (default options)
	Enterprise Mode	SMB Mode	
TLS mode	Enabled	Disabled	Disabled, can be enabled at a later time
Web UI	Disabled	Enabled	Enabled
IDER/SOL/KVM Redirection network interface enabled	Disabled	Enabled if feature enabled in Intel® MEBX	Enabled, can be disabled at a later time
Legacy Redirection Mode (Controls FW listening for incoming redirection connections)	Disabled	Enabled if feature enabled in Intel® MEBX	Disabled (Need to set to **Enabled** in order to work with Legacy SMB consoles)

 NOTE: Customers may purchase TLS permanently disabled from the factory due to restrictions on encryption technology in their country of delivery, therefore customers cannot re-enable TLS.

 NOTE: KVM is supported only with integrated graphics CPU and system should be in integrated graphics mode.

Manual configuration can be performed using the following six steps:

1. Flash image with system BIOS and FW.
2. Enter the Intel MEBX via <F12> menu and enter default password ***admin*** and then change password.
3. Enter Intel ME General Settings menu.
4. Select Activate Network Access.
5. Select **Y** in the confirmation message.
6. Exit the Intel MEBx.

 NOTE: You can also accomplish the activation through external means or through Operating System using Intel Activator tool.

Setup and Configuration Overview

The following is a list of important terms related to the Intel AMT setup and configuration.

- **Setup and configuration** — The process that populates the Intel AMT-managed computer with usernames, passwords, and network parameters that enable the computer to be administered remotely.
- **Configuration service** — A third-party application that completes the Intel AMT provisioning.
- **Intel AMT WebUI** — A Web browser-based interface for limited remote computer management.

You must set up and configure Intel AMT in a computer before using it. Intel AMT setup readies the computer for Intel AMT mode and enables network connectivity. This setup is generally performed only once in the lifetime of a computer. When Intel AMT is enabled, it can be discovered by management software over a network.

Once Intel AMT is set up in Enterprise mode, it is ready to initiate configuration of its own capabilities. When all required network elements are available, simply connect the computer to a power source and the network, and Intel AMT automatically initiates its own configuration. The configuration service (a third-party application) completes the process for you. Intel AMT is then ready for remote management. This configuration typically takes only a few seconds. When Intel AMT is set up and configured, you can reconfigure the technology as needed for your business environment.

Once Intel AMT is set up in SMB mode, the computer does not have to initiate any configuration across the network. It is set up manually and is ready to use with the Intel AMT Web GUI.

Intel AMT Setup and Configuration States

The act of setting up and configuring Intel AMT is also known as provisioning. An Intel AMT capable computer can be in one of three setup and configuration states:

- Factory-default state
- Setup state
- Provisioned state

The **Factory-Default State** is a fully unconfigured state in which security credentials are not yet established and Intel AMT capabilities are not yet available to management applications. In the factory-default state, Intel AMT has the factory-defined settings.

The **Setup State** is a partially configured state in which Intel AMT has been set up with initial networking and transport layer security (TLS) information: an initial administrator password, the provisioning passphrase (PPS), and the provisioning identifier (PID). When Intel AMT has been set up, Intel AMT is ready to receive enterprise configuration settings from a configuration service.

The **Provisioned State** is a fully configured state in which the Intel Management Engine (ME) has been configured with power options, and Intel AMT has been configured with its security settings, certificates, and the settings that activate the Intel AMT capabilities. When Intel AMT has been configured, the capabilities are ready to interact with management applications.

Provisioning Methods

TLS-PKI

TLS-PKI is also known as "Remote Configuration". The SCS uses TLS-PKI (Public Key Infrastructure) certificates to securely connect to an Intel AMT enabled computer. The certificates can be generated a few ways:

- The SCS can connect using one of the default certificates pre-programmed on the computer, as detailed in the MEBx interface section of this document.
- The SCS can create a custom certificate, which can be deployed on the AMT computer by means of a desk-side visit with a specially formatted USB thumb drive as detailed in the Configuration Service section of this document.
- The SCS could use a custom certificate which was pre-programmed at the Dell factory through the Custom Factory Integration (CFI) process.

TLS-PSK

TLS-PSK is also known as "One-Touch Configuration". The SCS uses PSK's (Pre-Shared Key's) to establish a secure connection with the AMT computer. These 52-character keys can be created by the SCS, and then deployed on the AMT

computer with a desk-side visit in one of two ways:

- The key can be manually typed into the MEBx.
- The SCS can create a list of custom keys, and put them onto a specially formatted USB thumb drive. Then each AMT computer retrieves a custom key from the specially formatted USB thumb drive during BIOS boot as detailed in the Configuration Service section of this document.

MEBx Settings Overview

The Intel Management Engine BIOS Extension (MEBx) provides platform-level configuration options for you to configure the behavior of Management Engine (ME) platform. Options include enabling and disabling individual features and setting power configurations.

This section provides details about MEBx configuration options and constraints if any.

Access MEBx Configuration User Interface

The MEBx configuration user interface can be accessed on a computer through the following steps:

1. Turn on (or restart) your computer.
2. When the DELL™ logo appears, press <F12> immediately and select MEBx.

   NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop. Then shut down your computer and try again.

3. Type the ME password. Press <Enter>. The default password is 'admin' and it can be altered by the user.

The MEBx screen appears as shown below.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0047/Intel(R) ME v7.0.0.1117
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[MAIN MENU]
Intel(R) ME General Settings  ►
Intel(R) AMT Configuration    ►
Exit

Intel(R) ME Password

[ESC]=Exit                                   [ENTER]=Submit
```

The main menu presents three function selections:

- Intel ME General Settings
- Intel AMT Configuration
- Exit

 NOTE: Intel MEBx will display only detected options. If one or more of these options does not appear, verify that the system supports the relevant missing feature.

Changing the Intel ME Password

The default password is admin and is the same on all newly deployed platforms. You must change the default password before changing any feature configuration options.

When an IT administrator first enters the Intel MEBx configuration menu with the default password, he or she must change the default password before any feature can be used.

The new password must include the following elements:

- Eight characters, no more than 32
- One uppercase letter
- One lowercase letter
- A number
- A special (Non-alphanumeric) character, such as !, $, or ; excluding the : " and , characters.)

 NOTE: The underscore (_) and spacebar are valid password characters but do NOT add to the password complexity.

 NOTE: The password can be reset to the default setting (admin) by shutting down the system, removing AC and DC power and performing a RTC reset.

* Information on this page provided by Intel.

ME General Settings

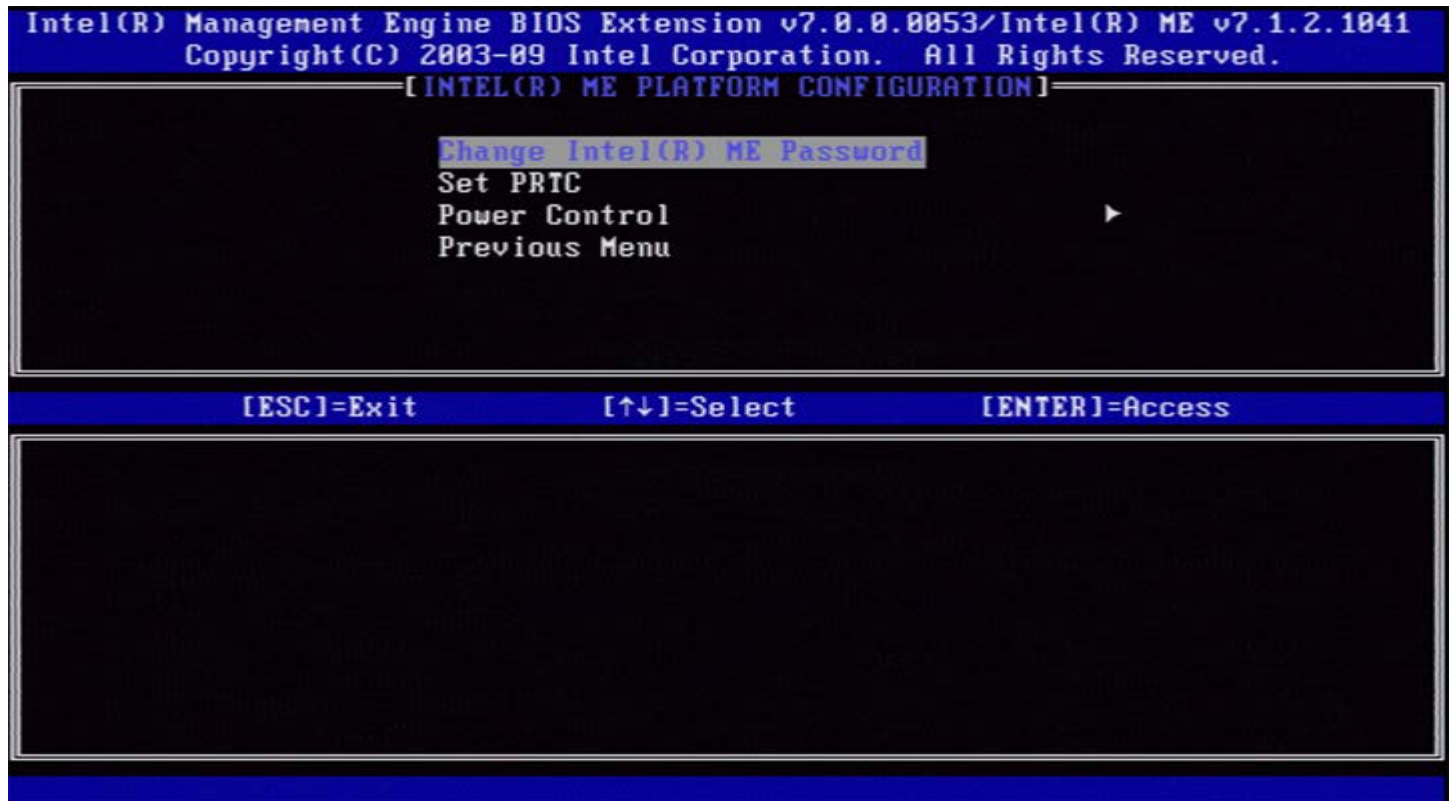
To reach the **Intel Management Engine (ME) Platform Configuration** page, follow these steps:

1. Under the Management Engine BIOS Extension (MEBx) main menu, select **Intel ME General Settings**. Press <Enter>.
2. The following message appears: "Acquiring General Settings configuration".

The Intel MEBX main menu changes to the **Intel ME Platform Configuration** page.
This page allows the IT administrator to configure the specific functionality of the Intel ME, such as password, power options, and so on. The following are quick links to the various sections.

- Change Intel ME Password
- Set PRTC
- Power Control
    - Intel ME ON in Host Sleep
    - Idle Time Out
    - Previous Menu
- Previous Menu

Intel ME Platform Configuration

```
Intel(R) Management Engine BIOS Extension v7.0.0.0053/Intel(R) ME v7.1.2.1041
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) ME PLATFORM CONFIGURATION]

Change Intel(R) ME Password
Set PRTC
Power Control                                ►
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access
```

 NOTE: The option of "Intel ME State Control" appearing in previous versions of MEBx has been removed in order to avoid end users accidentally disable Intel ME. The option can now be offered by system BIOS.

Change Intel ME Password

1. At the Intel ME New Password prompt, type your new password. (The password policies and restrictions are available here.)
2. At the Verify Password prompt, re-type your new password. Your password is now changed.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) ME PLATFORM CONFIGURATION]

Change Intel(R) ME Password
Set PRTC
Power Control
Previous Menu

Intel(R) ME New Password

[ESC]=Exit                                        [ENTER]=Submit
```

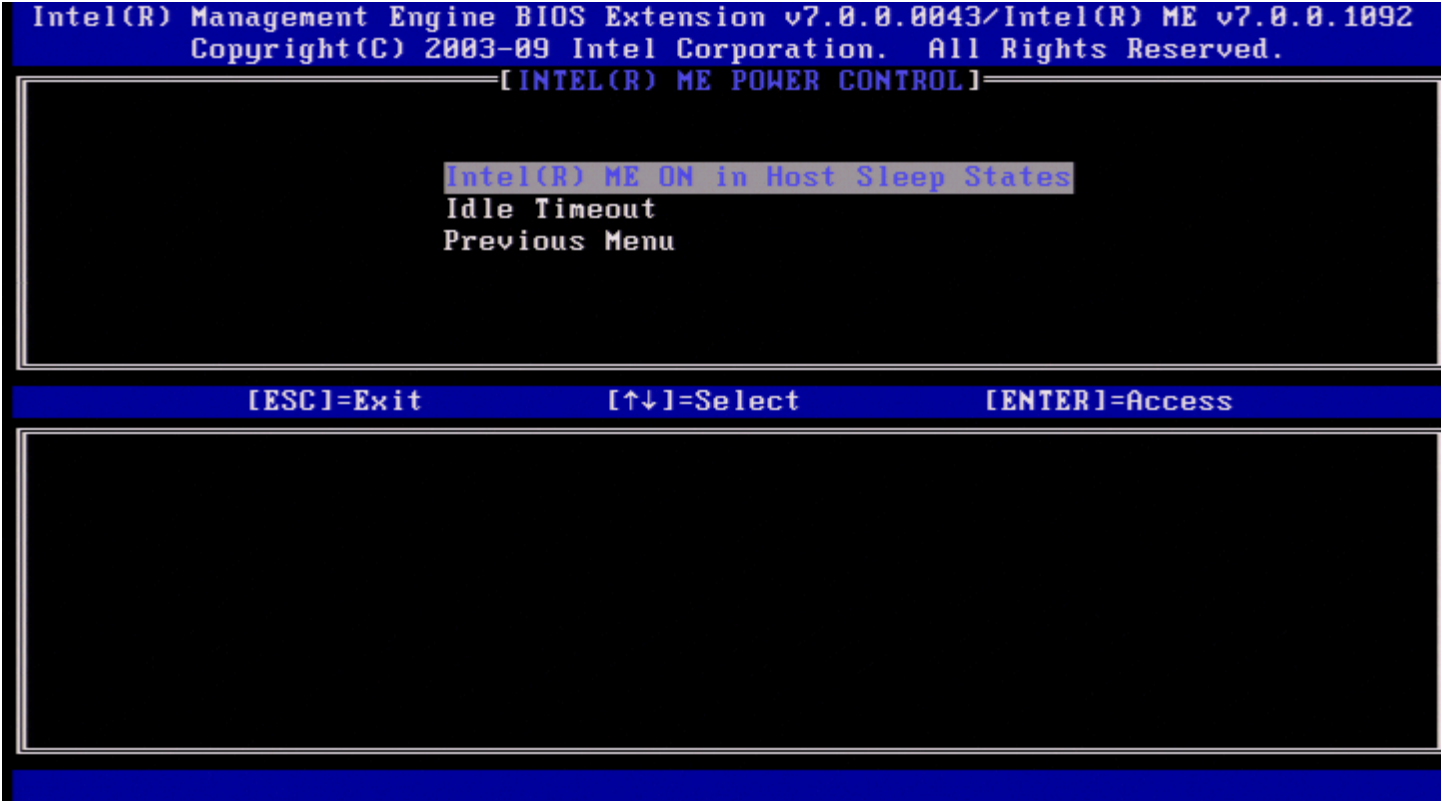
Set PRTC

Under the Intel ME Platform Configuration menu select **Set PRC** and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) ME PLATFORM CONFIGURATION]

Change Intel(R) ME Password
Set PRTC
Power Control
Previous Menu

Enter PRTC in GMT(UTC) format(YYYY:MM:DD:HH:MM:SS)

[ESC]=Exit                                        [ENTER]=Submit
```

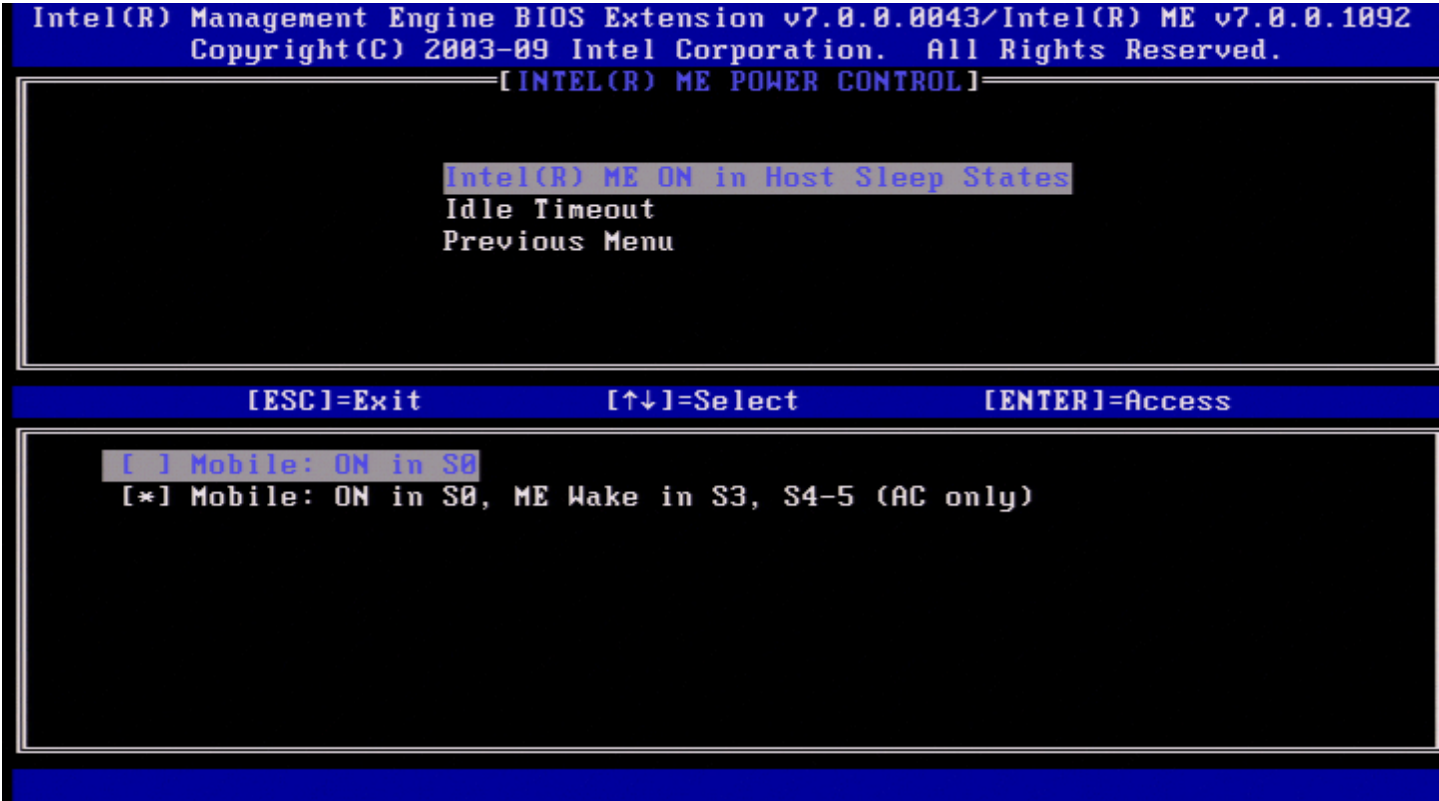
Valid date range: 1/1/2004 to 1/4/2021. Setting the PRTC value is used for virtually maintaining PRTC during the power-off (G3) state.
Type *PRTC* in GMT (UTC) format (YYYY:MM:DD:HH:MM:SS) and press <Enter>.

Power Control

Under the Intel ME Platform Configuration menu select **Power Control** and press <Enter>.
The Intel Power Control page appears.

To comply with ENERGY STAR* and EUP LOT6 requirements, the Intel ME can be turned off in various sleep states. The Intel ME Power Control menu configures the Intel ME platform power related policies.

Intel ME ON in Host Sleep States

Under the Intel ME Power Control menu select **Intel ME ON in Host Sleep States** and press <Enter>.
Move the Up/Down arrow key to select the desired power policy and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) ME POWER CONTROL]

                Intel(R) ME ON in Host Sleep States
                Idle Timeout
                Previous Menu

      [ESC]=Exit            [↑↓]=Select            [ENTER]=Access

    [ ] Mobile: ON in S0
    [*] Mobile: ON in S0, ME Wake in S3, S4-5 (AC only)
```

The end user administrator can select the desired power package to use depending on the system usage.

With Intel ME WoL, after the time-out timer expires, the Intel ME remains in the M-off state until a command is sent to the ME. After this command has been sent, the Intel ME will transition to an M0 or M3 state and will respond to the next command that is sent. A ping to the Intel ME will also cause the Intel ME to go into an M0 or M3 state.

The Intel ME takes a short time to transition from the M-off state to the M0 or M3 state. During this time, Intel AMT will not respond to any Intel ME commands. When the Intel ME has reached the M0 or M3 state, the system will respond to Intel ME commands.

The following table illustrates the details of the power packages.

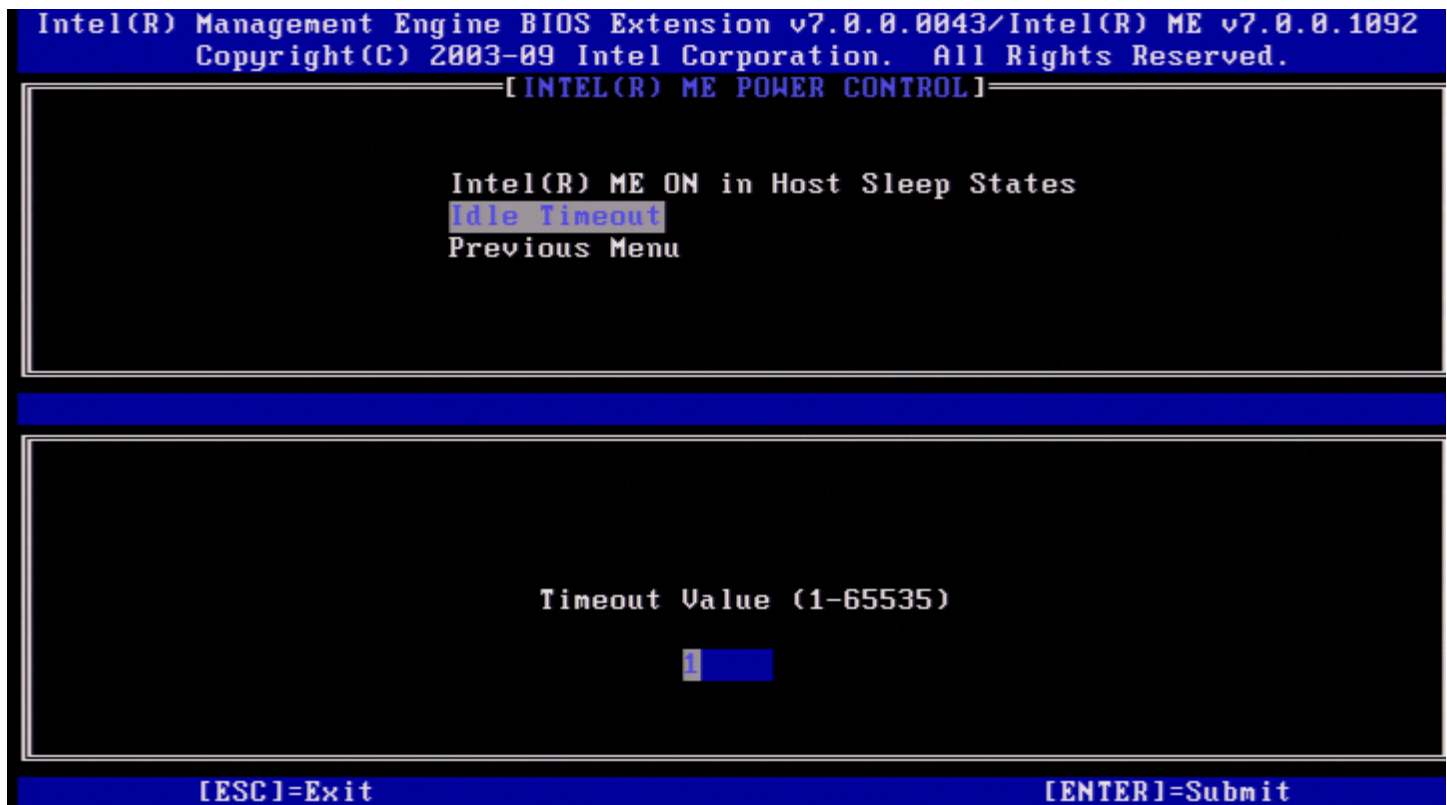
Power Package	**1**	**2**
S0	ON	ON
S3	OFF	ON/ ME WoL
S4/S5	OFF	ON/ ME WoL

Select the desired Power Policy and press <Enter>.

 NOTE: Changing a system into the provisioning state will automatically switch to Power Package 2. This can later be changed through WebUI, the management console, or MEBx.

Idle Time Out

Under the Intel ME Power Control menu select **Idle Time Out** and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[INTEL(R) ME POWER CONTROL]

Intel(R) ME ON in Host Sleep States
Idle Timeout
Previous Menu

Timeout Value (1-65535)
1

[ESC]=Exit                                  [ENTER]=Submit
```

This setting is used to set time out value as to define the Intel ME idle timeout in M3 state. The value should be entered in minutes. The value indicates the amount of time that the Intel ME is allowed remain idle in M3 before transitioning to the M-off state.

 NOTE: If the Intel ME is in M0, it will NOT transition to M-off.

Previous Menu

Under the Intel ME Platform Configuration menu select **Previous Menu** and press <Enter>.
The Intel ME Platform Configuration page appears.

Previous Menu

Under the Intel ME Platform Configuration menu select **Previous Menu** and press <Enter>.
The Main Menu appears.

* Information on this page provided by Intel.

AMT Configuration

After you configure the Intel Management Engine (ME) feature, you must reboot before configuring the Intel AMT for a clean system boot. The following image shows the **Intel AMT configuration** menu after a user selects the **Intel AMT Configuration** option from the **Management Engine BIOS Extension (MEBx)** main menu. This feature allows you to configure an Intel AMT capable computer to support the Intel AMT management features.

 NOTE: You need to have a basic understanding of networking and computer technology terms, such as TCP/IP, DHCP, VLAN, IDE, DNS, subnet mask, default gateway, and domain name. Explaining these terms is beyond the scope of this document.

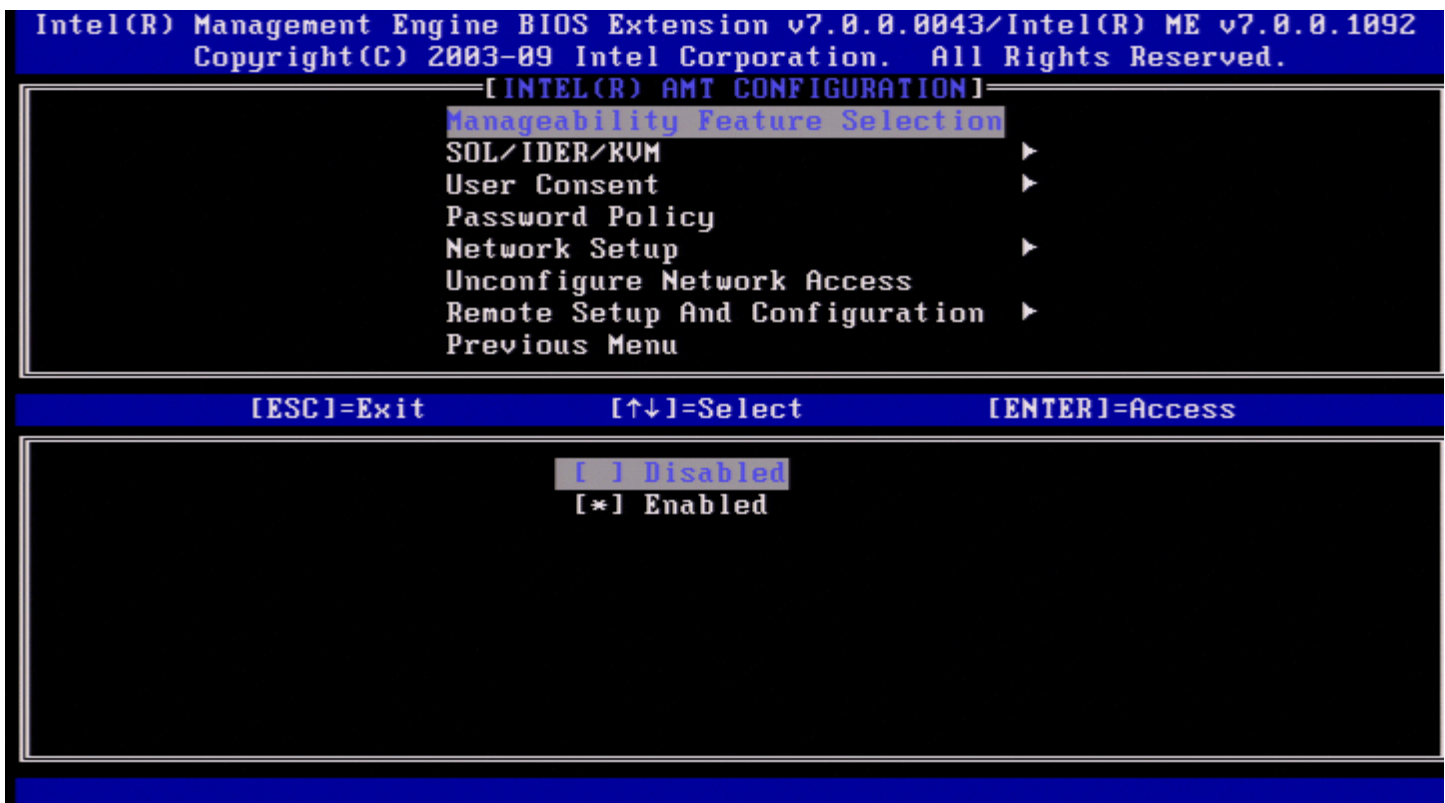
To navigate to the **Intel AMT Configuration** page, perform the following steps:

1. Under the **Management Engine BIOS Extension** (MEBx) main menu, select **Intel AMT Configuration**. Press <Enter>. The Intel AMT Configuration screen appears.

The quick links displayed on the Intel AMT Configuration screen are:

- Manageability Feature Selection
- SOL/IDER/KVM
  - Username and Password
  - SOL
  - IDER
  - Legacy Redirection Mode
  - KVM
  - Previous Menu
- User Consent
  - User Opt-in
  - Opt-in Configurable from remote IT
  - Previous Menu
- Password Policy
- Network Setup
  - Network Name Settings
    - Host Name
    - Domain Name
    - Shared / Dedicated FQDN
    - Dynamic DNS Update
    - Periodic Update Interval
    - TTL
    - Previous Menu
  - TCP/IP Settings
    - Wired LAN IPv4 Configuration
      - DHCP Mode
      - IPv4 Address
      - Subnet Mask Address
      - Default Gateway Address
      - Preferred DNS Address
      - Alternate DNS Address
      - Previous Menu
    - Wired LAN IPv6 Configuration
      - IPv6 Feature Selection
      - IPv6 Interface ID Type
      - IPv6 Address
      - IPv6 Default Router
      - Preferred DNS IPv6 Address
      - Alternate DNS IPv6 Address
      - Previous Menu
    - Wireless LAN IPv6 Configuration
      - IPv6 Feature Selection
      - IPv6 Interface ID Type
      - Previous Menu
    - Previous Menu
  - Previous Menu
- Activate Network Access
- Unconfigure Network Access
- Remote Setup And Configuration
  - Current Provisioning Mode
  - Provisioning Record

Manageability Feature Selection

1. Under the Intel AMT Configuration menu select **Manageability Feature Selection** and press <Enter>.
2. A message is displayed:
   [Caution] Disabling reset network settings including network ACLs to factory default. System resets on MEBx exit. Continue: (Y/N).
   Press **Y** to change setting or **N** to cancel.

When the Manageability Feature Selection is enabled, the Intel ME manageability feature menu appears. If it is disabled, ME manageability feature will not be displayed.

SOL/IDER/KVM

Under the Intel AMT Configuration page (with Intel AMT enabled) select **SOL/IDER/KVM** and press <Enter>.
The Intel AMT Configuration page changes to the SOL/IDER page.

Username and Password

Under the SOL/IDER page select **Username and Password** and press <Enter>.

This option provides the user authentication for SOL/IDER session. If Kerberos* is used, this option should be set to DISABLED. The user authentication is handled through Kerberos. If Kerberos is not used, the IT administrator has the choice to enable or disable user authentication on SOL/IDER session.

Option	Description
Enabled	Username and Password is enabled
Disabled	Username and Password is disabled.

SOL

Under the SOL/IDER page select **SOL** and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[SOL/IDER/KVM]
Username and Password
SOL
IDER
Legacy Redirection Mode
KVM
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access

[ ] Disabled
[*] Enabled
```

SOL allows the console input/output of an Intel AMT managed client to be redirected to a management server console (if the client system supports SOL). If the system does not support SOL, this value cannot enable it.

Option	Description
Enabled	SOL is enabled
Disabled	SOL is disabled.

 NOTE: Disabling SOL does not remove this feature but prevents it from being used.

IDER

Under the SOL/IDER page select **IDER** and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[SOL/IDER/KVM]
Username and Password
SOL
IDER
Legacy Redirection Mode
KVM
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access

[ ] Disabled
[*] Enabled
```

IDER allows an Intel AMT managed client to be booted by a management console from a remote disk image. If the client system does not support IDER, this value cannot enable it.

Option	Description
Enabled	IDER is enabled
Disabled	IDER is disabled.

 NOTE: Disabling IDER does not remove this feature but prevents it from being used.

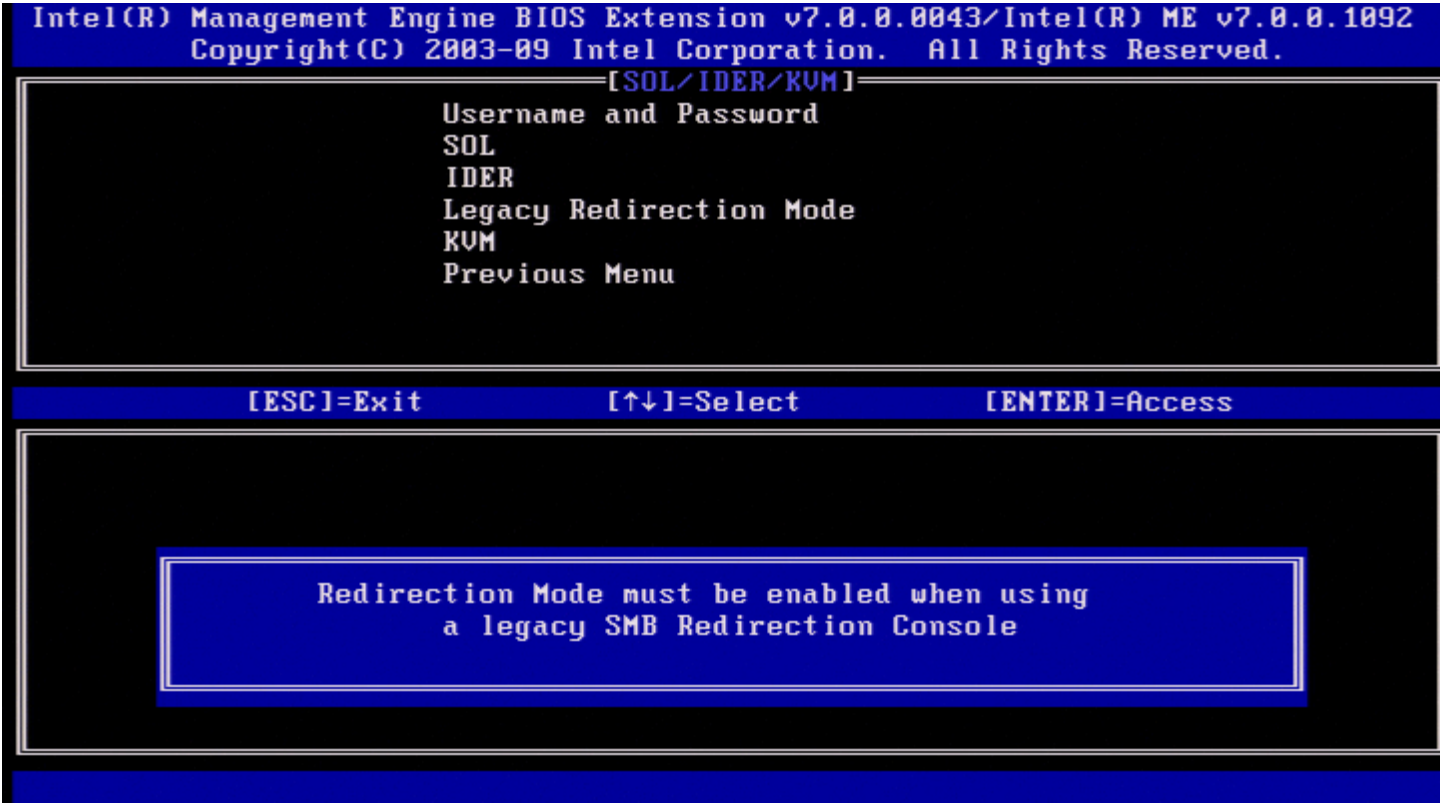
Legacy Redirection Mode

Under the SOL/IDER page select **Legacy Redirection Mode** and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
         Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[SOL/IDER/KVM]
Username and Password
SOL
IDER
Legacy Redirection Mode
KVM
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access
```

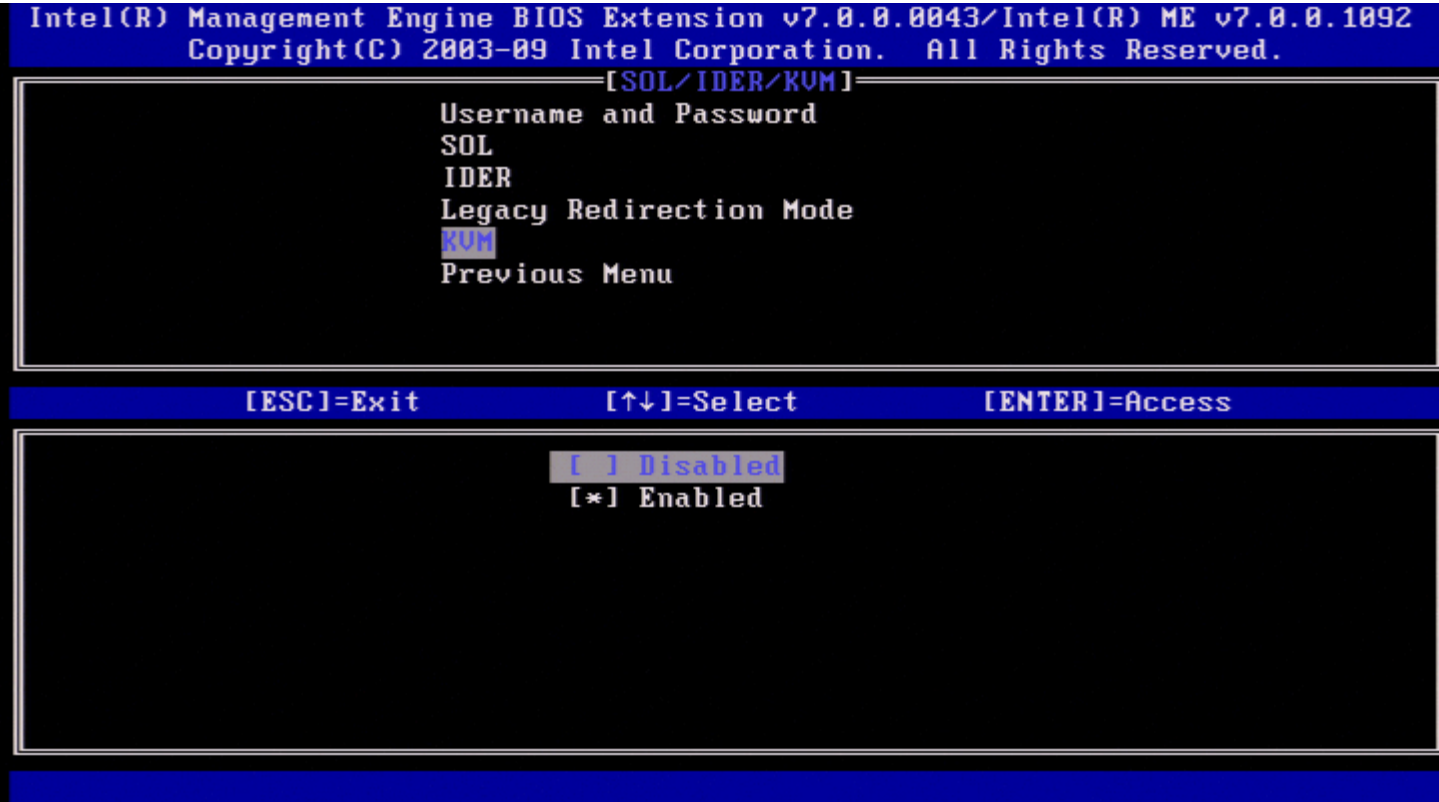
Legacy Redirection Mode controls how the redirection works. If set to disabled, the console needs to open the redirection ports before each session. This is meant for Enterprise consoles and new SMB consoles that support opening the redirection ports. The old SMB consoles (before Intel AMT 6.0) which do not support opening the redirection ports function need to manually turn on the redirection port through this Intel MEBx option.

When selecting the mode, the following message appears.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
         Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[SOL/IDER/KVM]
Username and Password
SOL
IDER
Legacy Redirection Mode
KVM
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access

Redirection Mode must be enabled when using
a legacy SMB Redirection Console
```

Option	Description
Disabled	Legacy redirection Mode is disabled.(Default)

Enabled	The port is left open at all times when redirection is enabled in the Intel MEBx. SMB consoles before Intel AMT 6.0 require this mode enabled for redirection sessions.

KVM

Under the SOL/IDER page select **KVM** and press <Enter>.

Option	Description
Disabled	KVM feature is disabled
Enabled	KVM feature is enabled

Previous Menu

Under the SOL/IDER page select **Previous Menu** and press <Enter>.
The SOL/IDER page changes to the **Intel AMT Configuration** page.

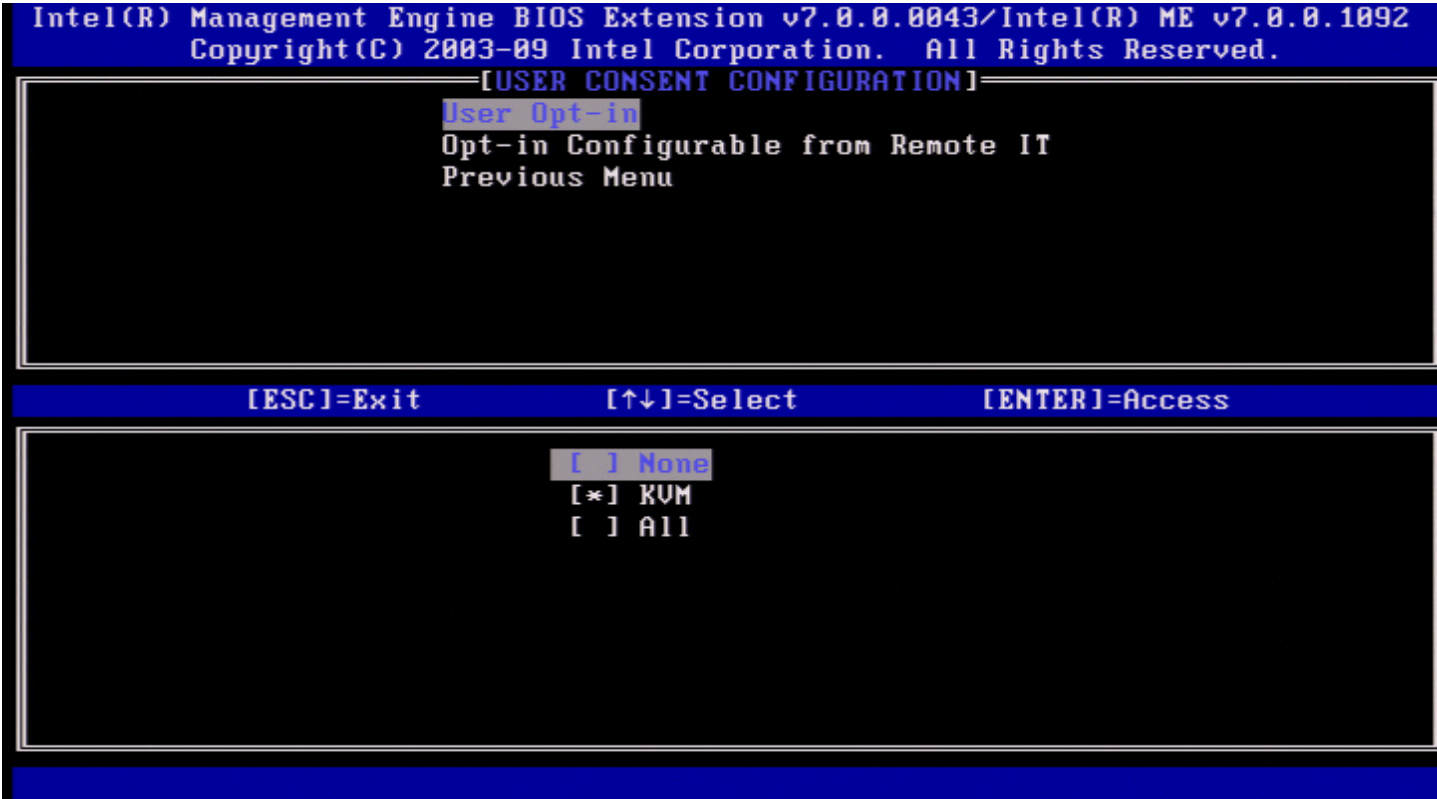
User Consent

Under the Intel AMT Configuration page select **User Consent** and press <Enter>.
The User Consent Configuration screen appears.

Sets whether local user consent is required before remote computer can establish a KVM Remote Control session to the local computer. Also sets whether the remote computer user can configure the KVM Opt-In Policy.

User Opt-in

Under the User Consent Configuration page select **User Opt-in** and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                        [USER CONSENT CONFIGURATION]
                        User Opt-in
                        Opt-in Configurable from Remote IT
                        Previous Menu

        [ESC]=Exit              [↑↓]=Select              [ENTER]=Access

                              [ ] None
                              [*] KVM
                              [ ] All
```

The following options can be selected:

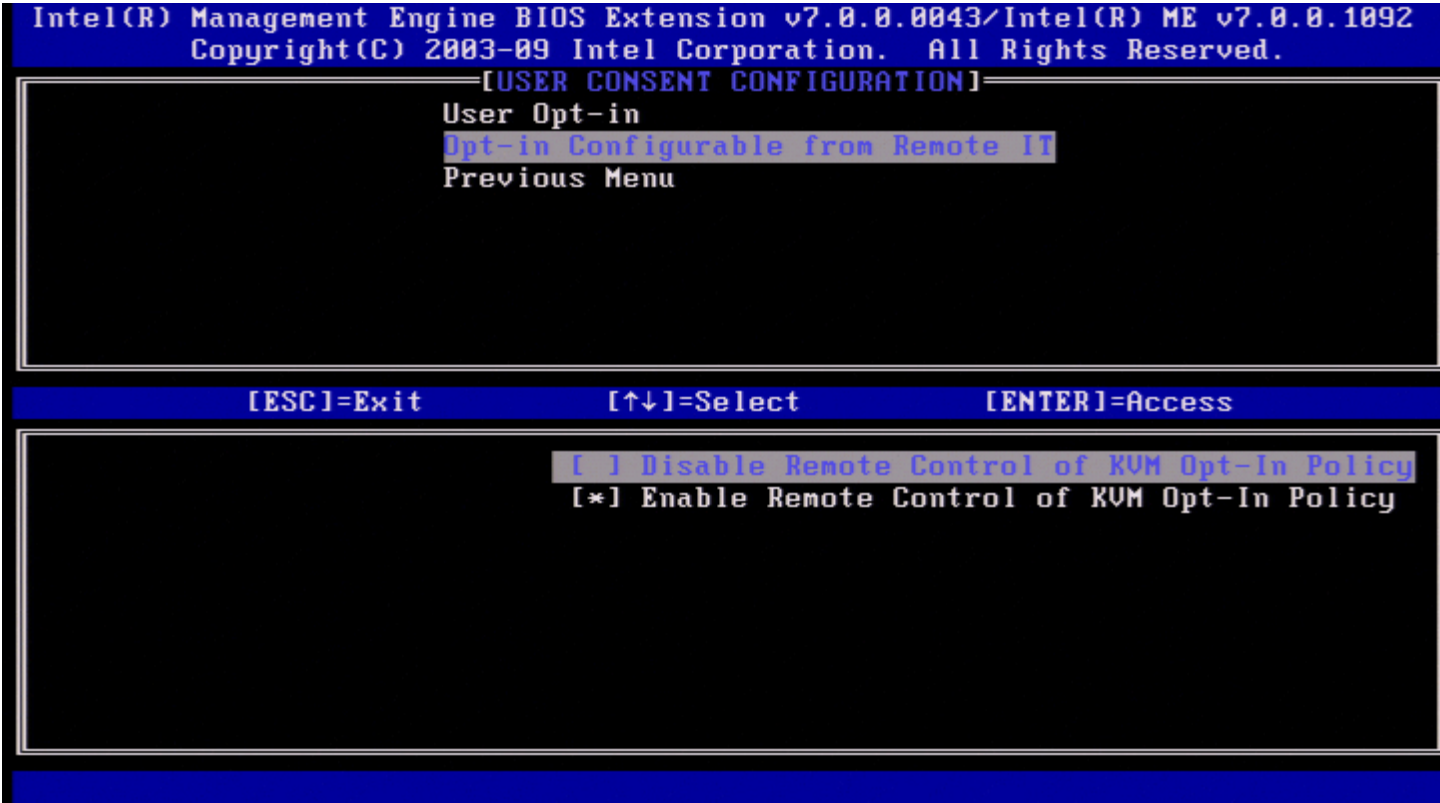
Option	Description
None	Local User Consent is not required for a remote computer to establish KVM Remote Control session.
KVM	Local User Consent is required for a remote computer to establish KVM Remote Control session.
All	Local User Consent is required for SOL, IDER and KVM

 NOTE: When using Host Based Provisioning, Client mode will override this setting and behave as if the "ALL" option has been selected. For more details on Host Based Provisioning and Client Mode, see the *Activator++ User guide* and the *UCT (User Consent Tool)* user guide in the SDK kit.

Opt-in Configurable from remote IT

Under the IKVM Configuration page select **Opt-in Configurable from remote IT** and press <Enter>.

This setting determines whether a remote computer's user can configure the Opt-In Policy when establishing a KVM Remote Control session to this computer.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                    [USER CONSENT CONFIGURATION]
                    User Opt-in
                    Opt-in Configurable from Remote IT
                    Previous Menu

        [ESC]=Exit          [↑↓]=Select          [ENTER]=Access

                         [ ] Disable Remote Control of KVM Opt-In Policy
                         [*] Enable Remote Control of KVM Opt-In Policy
```

Option	Description
Disable Remote Control of KVM Opt-in Policy	Disables the remote user's ability to select User **OPT-IN** Policy. In this case only the local user can control the opt-in policy.
Enable Remote Control of KVM Opt-in Policy	Enables remote user's ability to select User **OPT-IN** Policy.

Previous Menu

Under the User Consent Configuration page select **Previous Menu** and press <Enter>.
The Intel AMT Configuration page appears.

Password Policy

Under the Intel AMT Configuration page select **Password Policy** and press <Enter>.

This option determines when the user is allowed to change the Intel MEBx password through the network.

- There are two passwords for the firmware.
- The Intel MEBx password is the password that is entered when a user is physically at the system.
- The network password is the password that is entered when accessing an Intel ME enabled system through the network.

 NOTE: By default they are both the same until the network password is changed via the network. Once changed over the network, the network password will always be kept separate from the local Intel MEBx password.

This option determines when the user is allowed to change the Intel MEBx password through the network.

 NOTE: The Intel MEBx password can be changed via the Intel MEBx user interface.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) AMT CONFIGURATION]
Manageability Feature Selection
SOL/IDER/KVM                        ►
User Consent                        ►
Password Policy
Network Setup                       ►
Unconfigure Network Access
Remote Setup And Configuration      ►
Previous Menu

[ESC]=Exit        [↑↓]=Select        [ENTER]=Access

[*] Default Password Only
[ ] During Setup And Configuration
[ ] Anytime
```

The options are:

Option	Description
Default Password Only	The Intel MEBx password can be changed through the network interface if the default password has not been changed.
During Setup and Configuration	The Intel MEBx password can be changed through the network interface during the setup and configuration process but at no other time. Once the setup and configuration process is complete, the Intel MEBx password cannot be changed via the network interface.
Anytime	The Intel MEBx password can be changed through the network interface at any time.

Network Setup

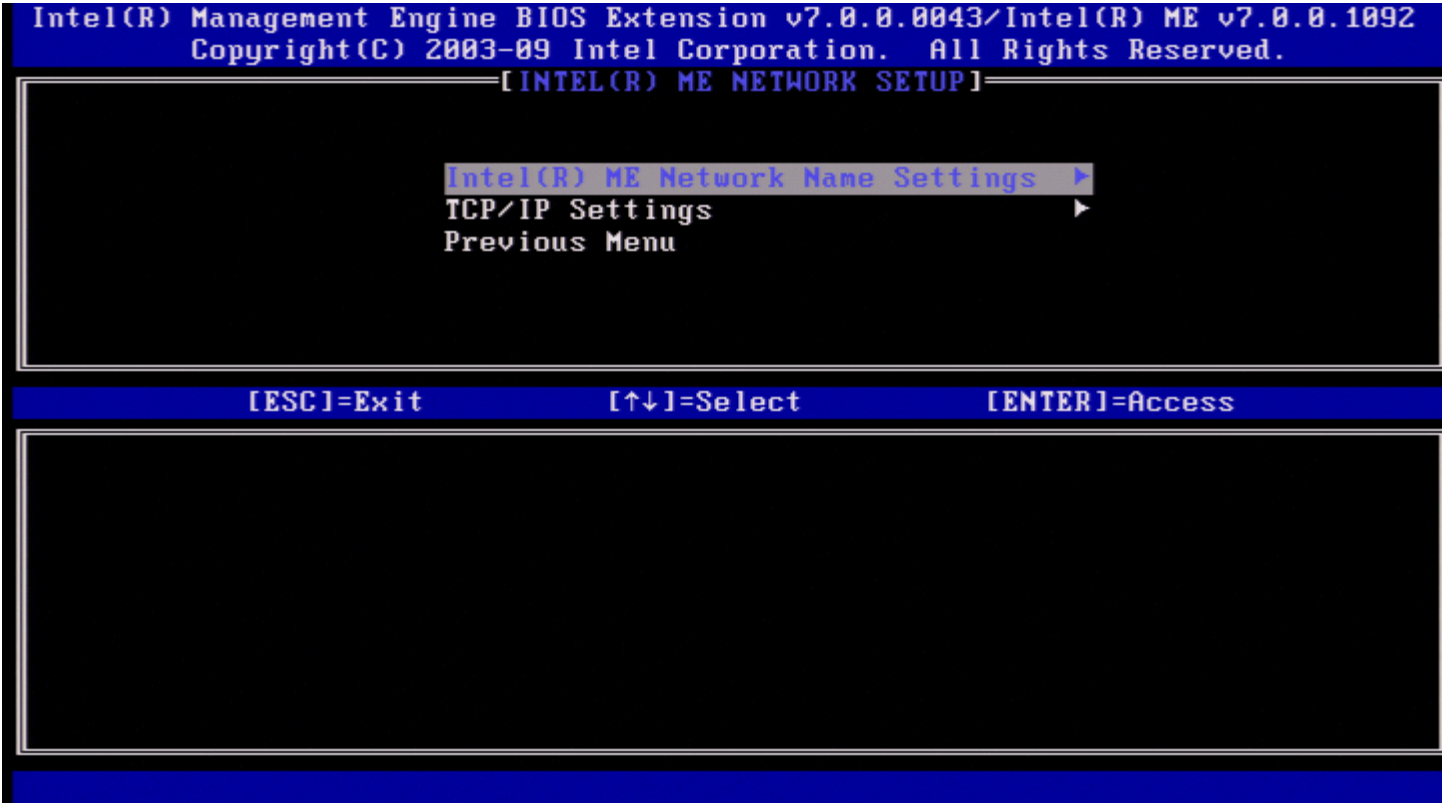
Under the Intel ME Platform Configuration menu select **Network Setup** and press <Enter>.
The Intel ME Network Setup page appears.

Network Name Settings

Under the Intel ME Network Name Settings select **Intel ME Network Name Settings** and press <Enter>.

Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[INTEL(R) ME NETWORK SETUP]

Intel(R) ME Network Name Settings ►
TCP/IP Settings ►
Previous Menu

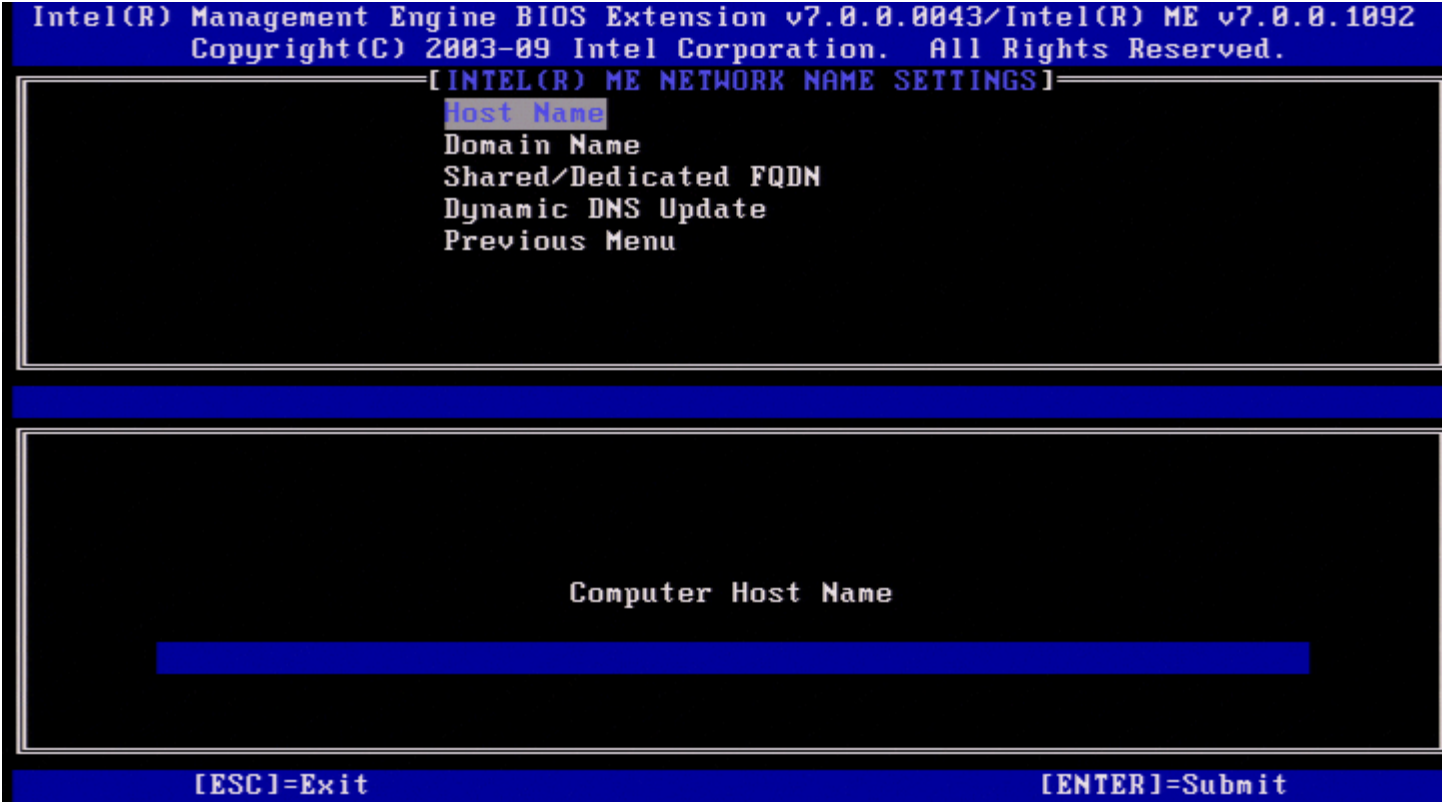
[ESC]=Exit [↑↓]=Select [ENTER]=Access

1. Host Name

Under the Intel ME Network Name Settings select **Host Name** and press <Enter>.
A host name can be assigned to the Intel AMT machine. This will be the hostname of the Intel AMT enabled system.

Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[INTEL(R) ME NETWORK NAME SETTINGS]

Host Name
Domain Name
Shared/Dedicated FQDN
Dynamic DNS Update
Previous Menu

Computer Host Name

[ESC]=Exit [ENTER]=Submit

2. Domain Name

Under the Intel ME Network Name Settings select **Domain Name** and press <Enter>.
A domain name can be assigned to the Intel AMT machine.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) ME NETWORK NAME SETTINGS]
Host Name
Domain Name
Shared/Dedicated FQDN
Dynamic DNS Update
Previous Menu

Computer Domain name

[ESC]=Exit                                   [ENTER]=Submit
```

3. Shared / Dedicated FQDN

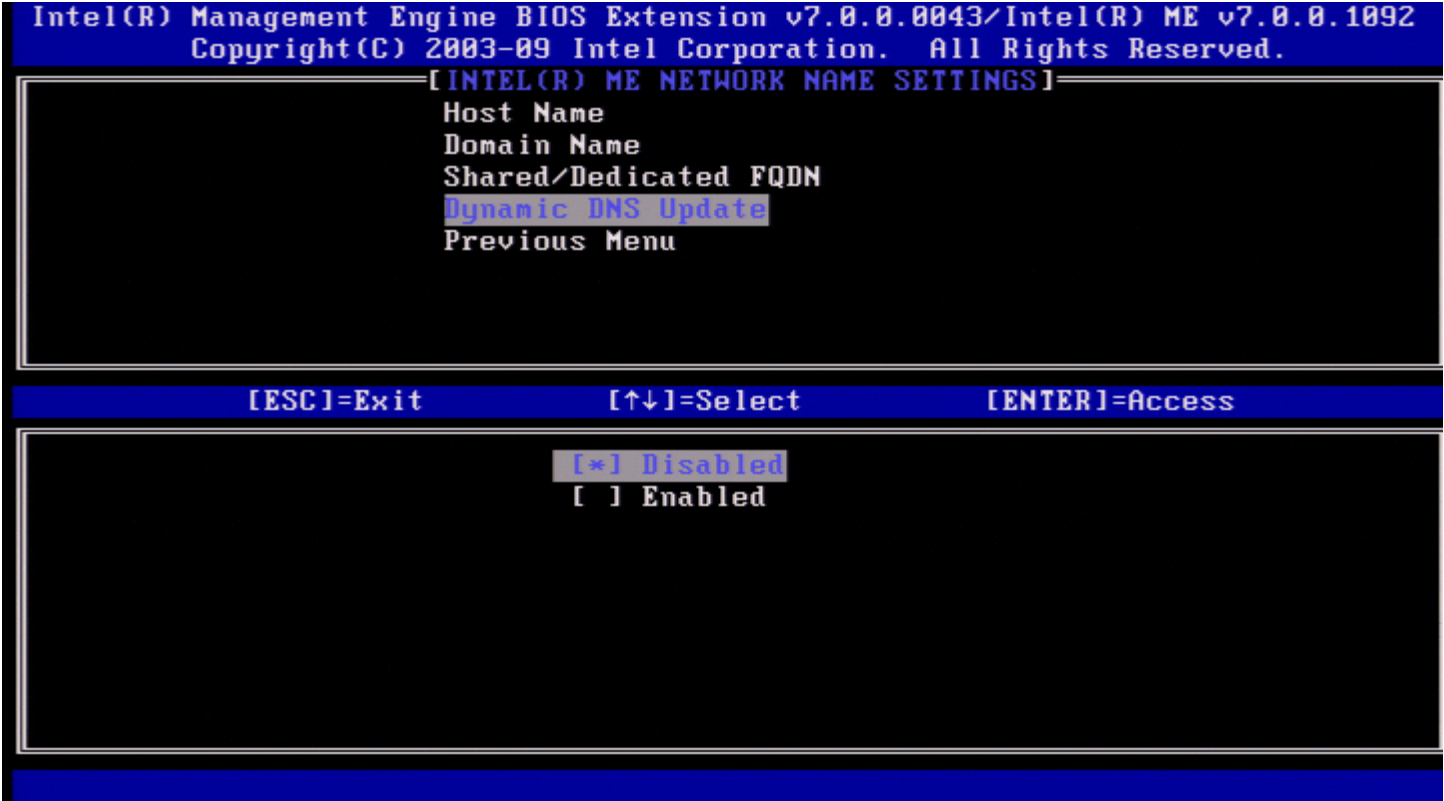
Under the Intel ME Network Name Settings select **Shared / Dedicated FQDN** and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) ME NETWORK NAME SETTINGS]
Host Name
Domain Name
Shared/Dedicated FQDN
Dynamic DNS Update
Previous Menu
[ESC]=Exit          [↑↓]=Select          [ENTER]=Access
[ ] Dedicated
[*] Shared
```

This setting determines whether the Intel ME Fully Qualified Domain Name (FQDN) (HostName.DomainName) is shared with the host and identical to the operating system machine name or dedicated to the Intel ME.

Option	Description
Dedicated	The FQDN domain name is dedicated to ME
Shared	The FQDN domain name is shared with the Host

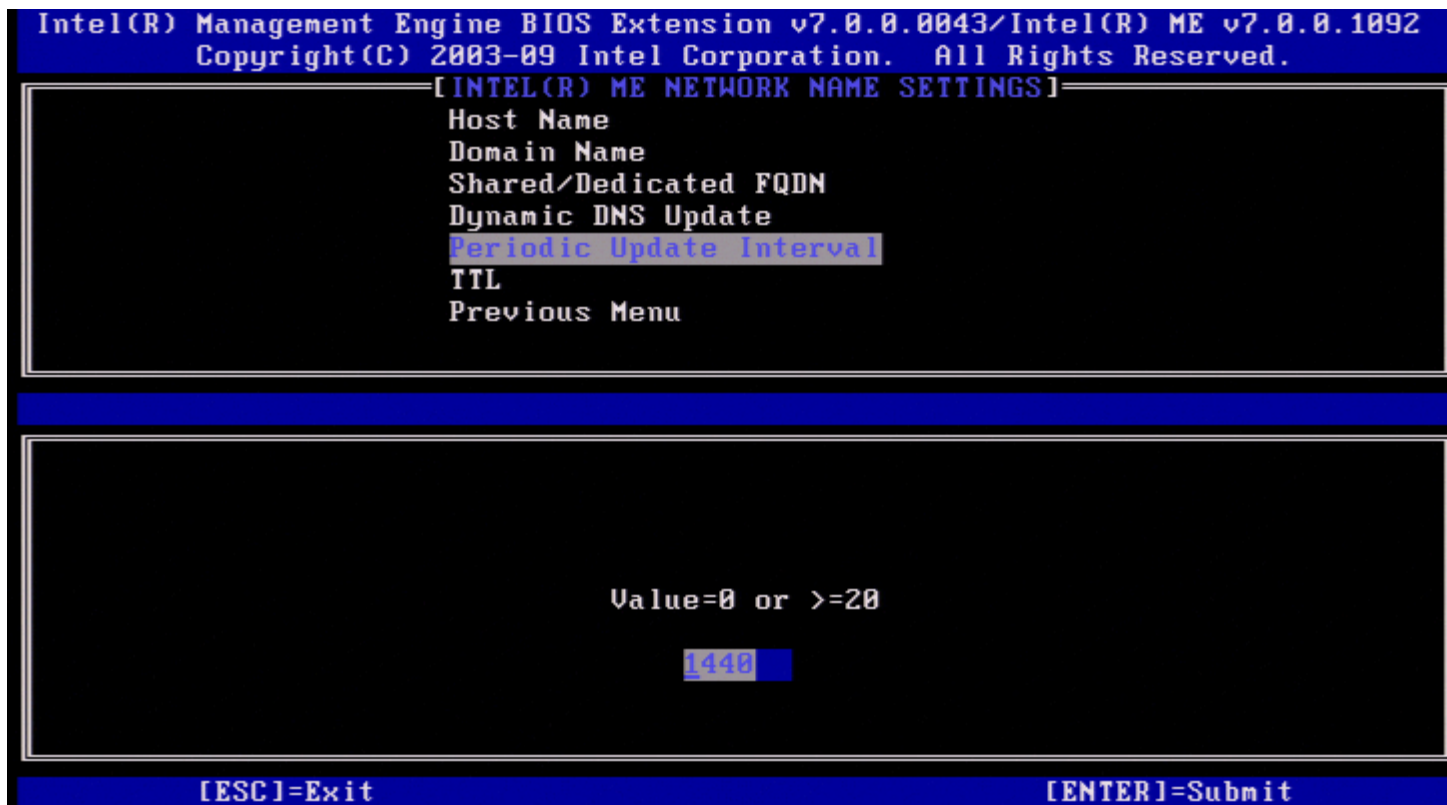
4. Dynamic DNS Update

Under the Intel ME Network Name Settings select **Dynamic DNS Update** and press <Enter>.

If Dynamic DNS Update is enabled then the firmware will actively try to register its IP addresses and FQDN in DNS using the Dynamic DNS Update protocol. If DDNS Update is disabled then the firmware will not make an attempt to update DNS using DHCP option 81 or Dynamic DNS update. If the DDNS Update state (Enabled or Disabled) is not configured by the user, then the firmware will assume its old implementation where the firmware used DHCP option 81 for DNS registration but did not directly update DNS using the DDNS update protocol. For selecting "Enabled" for Dynamic DNS Update, it is required that the Host Name and Domain Name are set.

Option	Description
Enabled	The Dynamic DNS Update Client in FW is enabled.
Disabled	The Dynamic DNS Update Client in FW is disabled.

5. Periodic Update Interval

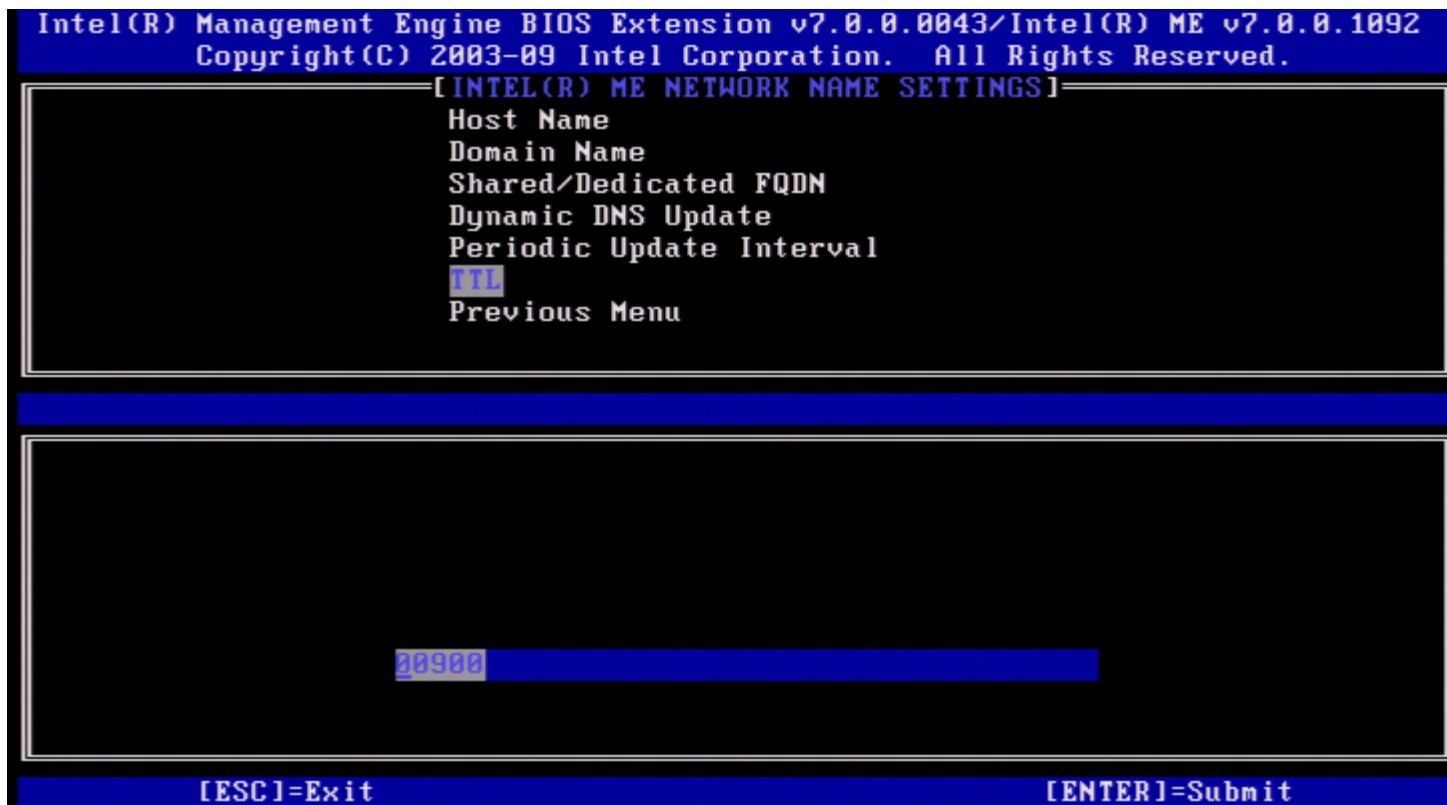
Under the Intel ME Network Name Settings select **Periodic Update Interval** and press <Enter>.
Type the desired internal and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
          Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                    [INTEL(R) ME NETWORK NAME SETTINGS]
                     Host Name
                     Domain Name
                     Shared/Dedicated FQDN
                     Dynamic DNS Update
                     Periodic Update Interval
                     TTL
                     Previous Menu

                            Value=0 or >=20

                                1440

         [ESC]=Exit                                      [ENTER]=Submit
```

 NOTE: Periodic Update Interval option is only available when Dynamic DNS Update is enabled.

Defines the interval at which the firmware DDNS Update client will send periodic updates. It should be set according to corporate DNS scavenging policy. Units are minutes. A value of 0 disables periodic update. The value set should be equal or greater than 20 minutes. The default value for this property is 24 hours - 1440 minutes.

6. TTL

Under the Intel ME Network Name Settings select **TTL** and press <Enter>.
Type the desired time (in seconds) and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) ME NETWORK NAME SETTINGS]
Host Name
Domain Name
Shared/Dedicated FQDN
Dynamic DNS Update
Periodic Update Interval
TTL
Previous Menu

00900

[ESC]=Exit                                        [ENTER]=Submit
```

 NOTE: The TTL option is only available when Dynamic DNS Update is enabled.

This setting allows configuring the TTL time in seconds. This number should be greater than zero. If set to zero firmware uses its internal default value which is 15 min or 1/3 of lease time for DHCP.

7. Previous Menu

Under the Intel ME Network Name Settings select **Previous Menu** and press <Enter>.
The Intel ME Network Name Settings menu changes to the Intel Network Setup page.

TCP/IP Settings

Under the Network Setup menu select **TCP/IP Settings** and press <Enter>.
The Intel Network Setup page appears.

The Intel Network Setup menu changes to the TCP/IP Settings page.

 NOTE: The Intel MEBx has menus for Wireless IPv6, but no menu for wireless IPv4. When the Intel MEBx starts it will check for the wireless interface to make the decision to display the wireless IPv6 menu or not.

Wired LAN IPv4 Configuration

Under the TCP/IP Settings select **Wired LAN IPv4 Configuration** and press <Enter>.
The Wired LAN IPv4 Configuration page appears.

1. DHCP Mode

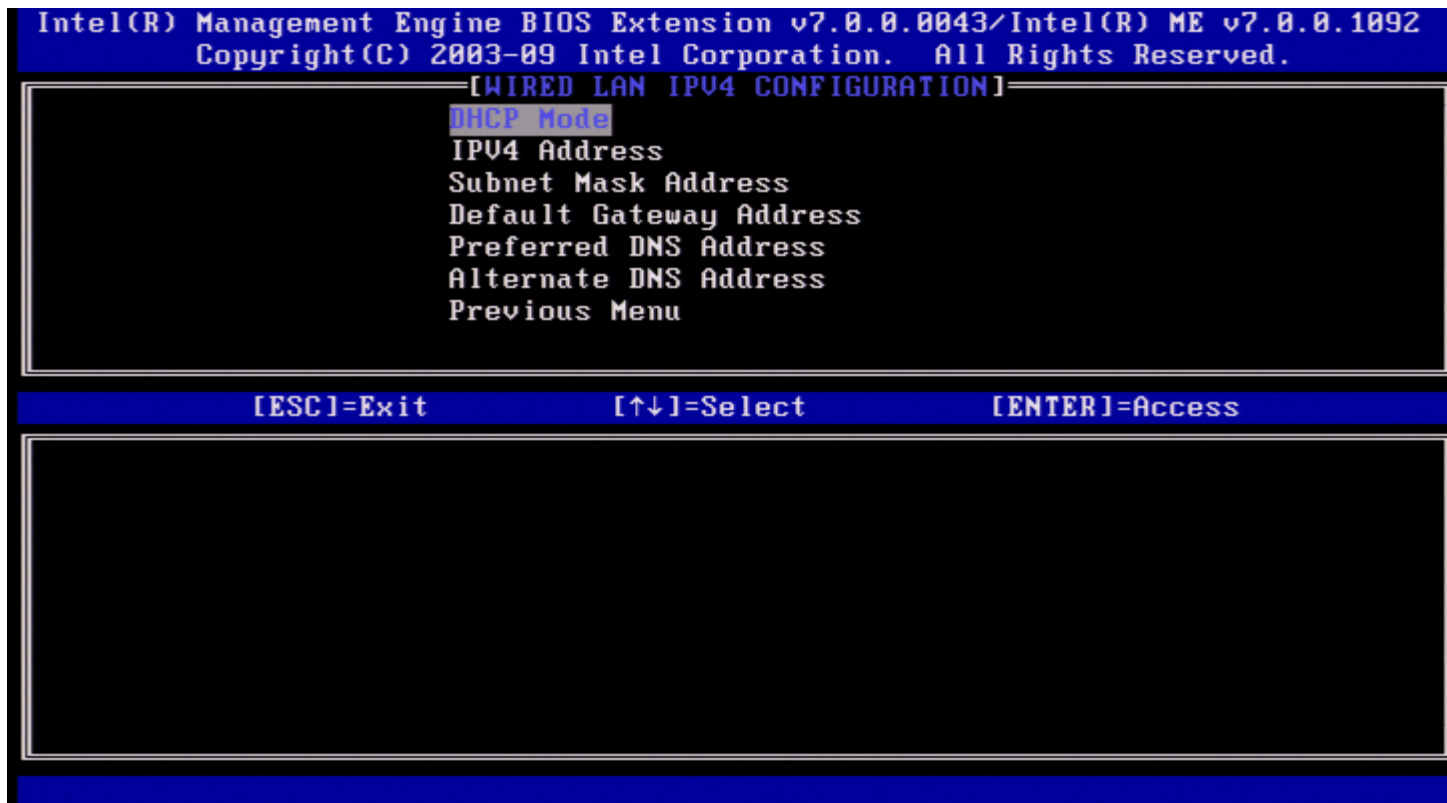
Under Wired LAN IPv4 Configuration select **DHCP Mode** and press <Enter>.
The Wired LAN IPv4 Configuration page appears.

Option	Description
Disabled	If DHCP mode is disabled, the following static TCP/IP settings are required for Intel AMT. If a system is in static mode the system may require a second IP address. This IP address, often called the Intel ME IP address may be different from the host IP address.
Enabled	If DHCP Mode is enabled, TCP/IP settings will be configured by a DHCP server.

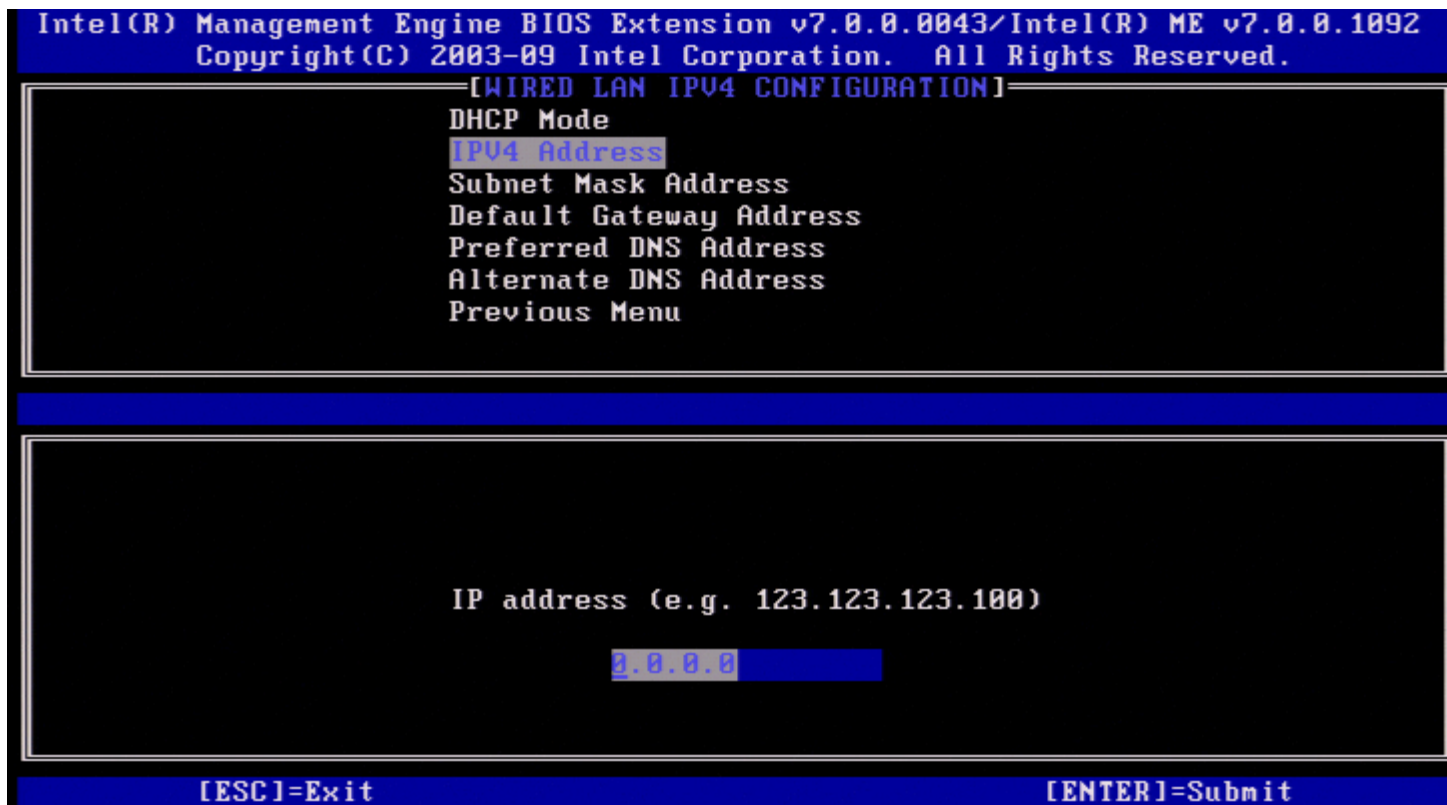
DHCP mode enabled.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[WIRED LAN IPV4 CONFIGURATION]
DHCP Mode
Previous Menu

[ESC]=Exit    [↑↓]=Select    [ENTER]=Access

[ ] Disabled
[*] Enabled
```

DHCP mode disabled.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[WIRED LAN IPV4 CONFIGURATION]
DHCP Mode
IPV4 Address
Subnet Mask Address
Default Gateway Address
Preferred DNS Address
Alternate DNS Address
Previous Menu

[ESC]=Exit    [↑↓]=Select    [ENTER]=Access
```

2. IPv4 Address

Select **IPv4 Address** and press <Enter>.
Type the IPv4 Address in the address column and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                        [WIRED LAN IPV4 CONFIGURATION]
                        DHCP Mode
                        IPV4 Address
                        Subnet Mask Address
                        Default Gateway Address
                        Preferred DNS Address
                        Alternate DNS Address
                        Previous Menu

                        IP address (e.g. 123.123.123.100)

                                 0.0.0.0

          [ESC]=Exit                                        [ENTER]=Submit
```

3. Subnet Mask Address

Select **Subnet Mask Address** and press <Enter>.
Type the Subnet Mask Address in the address column and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                        [WIRED LAN IPV4 CONFIGURATION]
                        DHCP Mode
                        IPV4 Address
                        Subnet Mask Address
                        Default Gateway Address
                        Preferred DNS Address
                        Alternate DNS Address
                        Previous Menu

                        Subnet mask (e.g. 255.255.255.0)

                                 0.0.0.0

          [ESC]=Exit                                        [ENTER]=Submit
```

4. Default Gateway Address

Select **Default Gateway Address** and press <Enter>.
Type the Default Gateway Address in the address column and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                        [WIRED LAN IPV4 CONFIGURATION]
                        DHCP Mode
                        IPV4 Address
                        Subnet Mask Address
                        Default Gateway Address
                        Preferred DNS Address
                        Alternate DNS Address
                        Previous Menu

                             Default Gateway Address

                                 0.0.0.0

        [ESC]=Exit                                       [ENTER]=Submit
```

5. Preferred DNS Address

Select **Preferred DNS Address** and press <Enter>.
Type the Preferred DNS Address in the address column and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                        [WIRED LAN IPV4 CONFIGURATION]
                        DHCP Mode
                        IPV4 Address
                        Subnet Mask Address
                        Default Gateway Address
                        Preferred DNS Address
                        Alternate DNS Address
                        Previous Menu

                              Preferred DNS address

                                 0.0.0.0

        [ESC]=Exit                                       [ENTER]=Submit
```

6. Alternate DNS Address

Select **Alternate DNS Address** and press <Enter>.
Type the Alternate DNS Address in the address column and press <Enter>.

Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092

[WIRED LAN IPV4 CONFIGURATION]

DHCP Mode
IPV4 Address
Subnet Mask Address
Default Gateway Address
Preferred DNS Address
Alternate DNS Address
Previous Menu

Alternate DNS Address

0.0.0.0

[ESC]=Exit [ENTER]=Submit

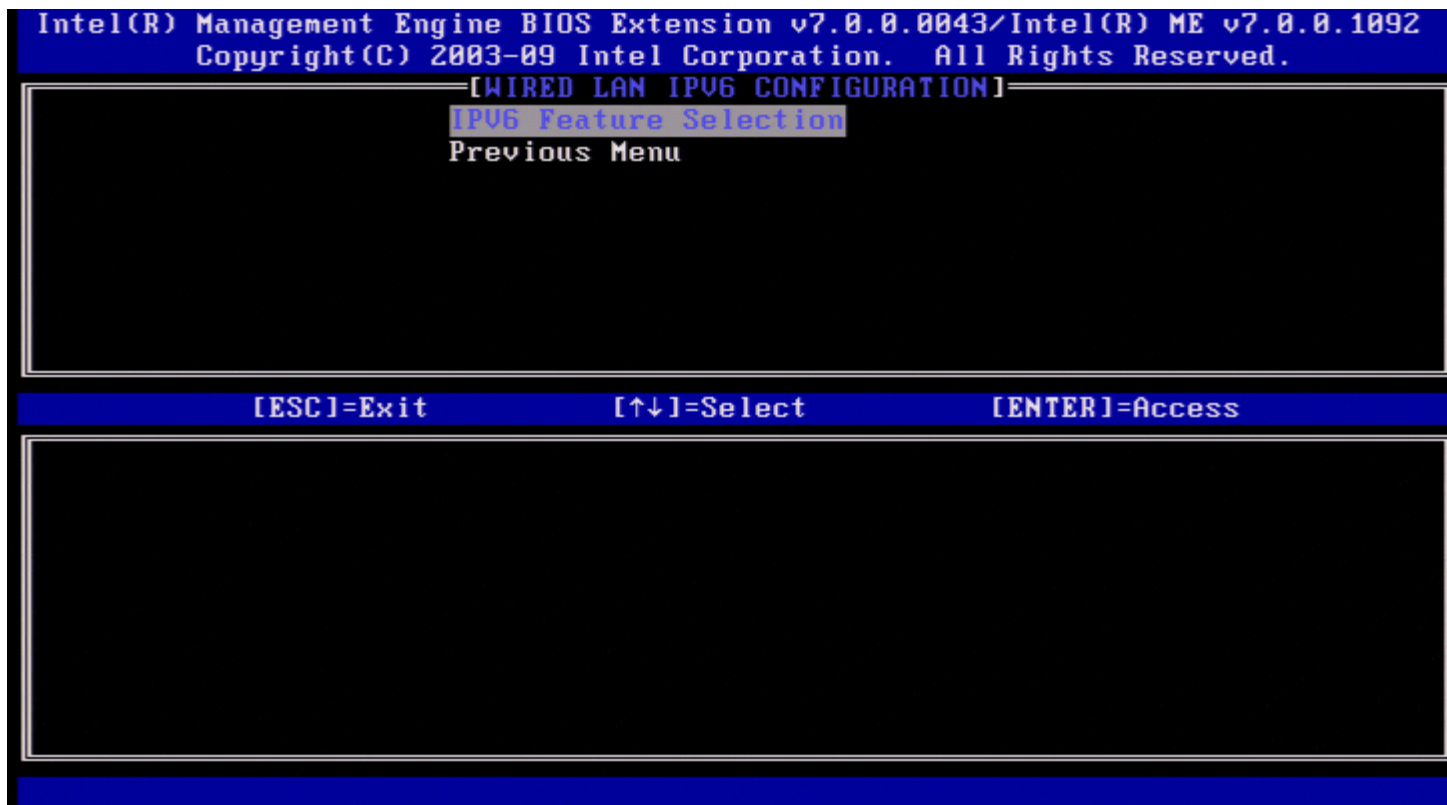
7. Previous Menu

Under the Wired LAN IPv4 Configuration select **Previous Menu** and press <Enter>.
The TCP/IP Settings menu appears.

Wired LAN IPv6 Configuration

Under the TCP/IP Settings select **Wired LAN IPv6 Configuration** and press <Enter>.
The Wired LAN IPv6 Configuration page appears.

The Intel ME IPv6 addresses are dedicated and not shared with the host operating system. To enable Dynamic DNS registration for IPv6 addresses it is required to configure a dedicated FQDN.

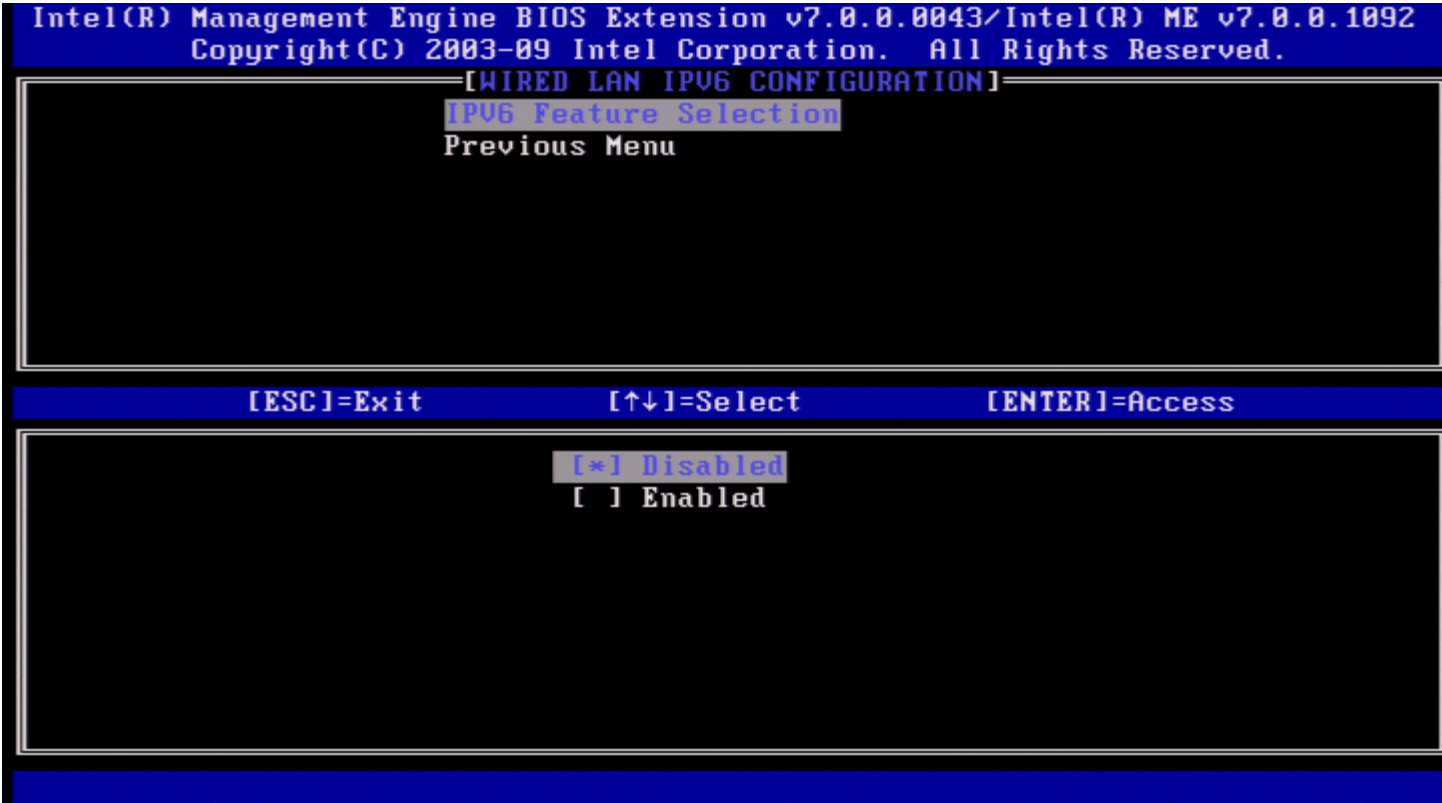
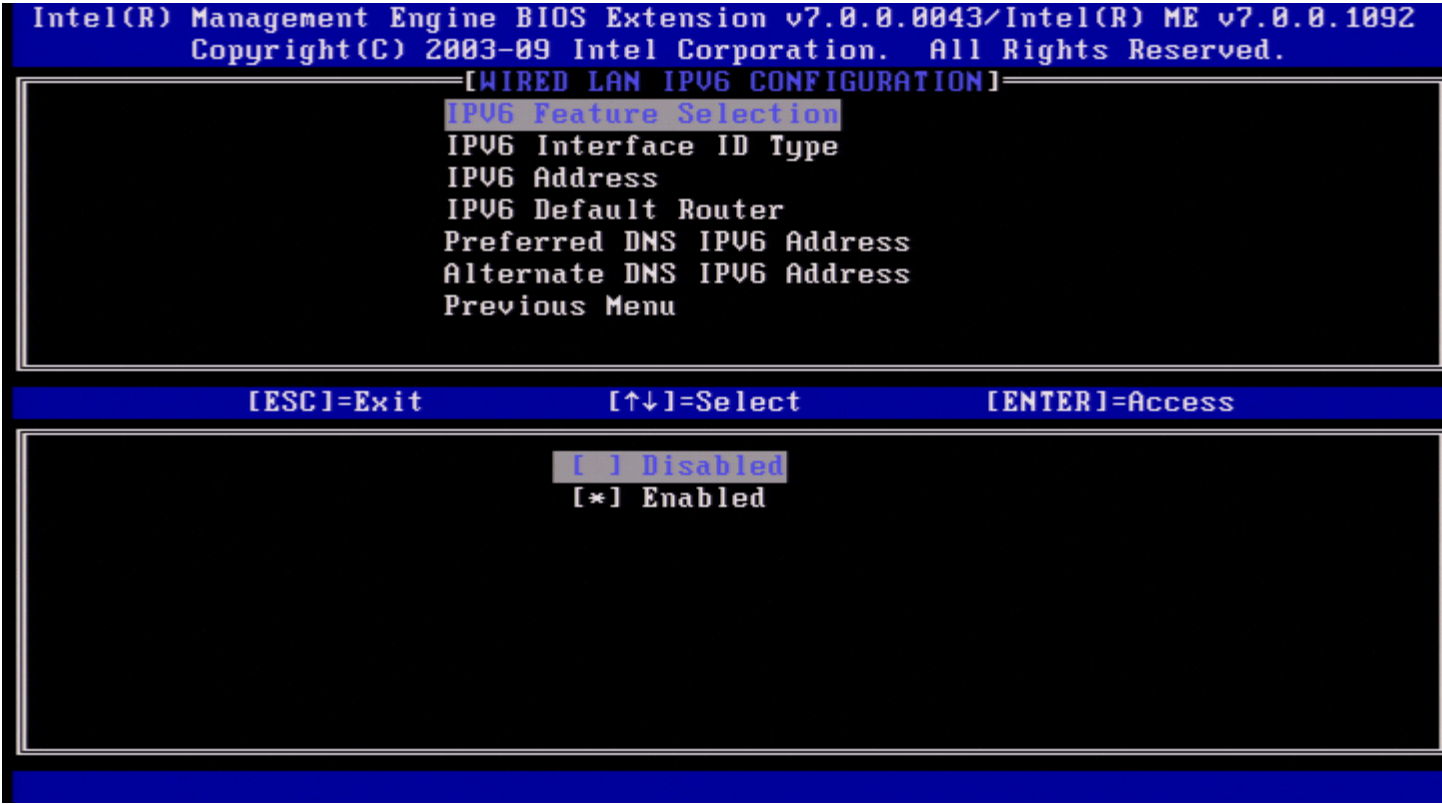
```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[WIRED LAN IPV6 CONFIGURATION]
IPV6 Feature Selection
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access
```

 NOTE: The Intel ME network stack supports a multi-homed IPv6 interface. Each network interface can be configured with the following IPv6 addresses:

1. One link local auto-configured address
2. Three auto-configured global addresses
3. One DHCPv6 configured address
4. One statically configured IPv6 address

1. IPv6 Feature Selection

Under the Wired LAN IPv6 Configuration select **IPv6 Feature Selection** and press <Enter>.

DISABLED, select 'Disabled' and press <Enter>. IPv6 Feature Selection disabled.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[WIRED LAN IPV6 CONFIGURATION]
IPV6 Feature Selection
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access

[*] Disabled
[ ] Enabled
```

ENABLED, select 'Enabled' and press <Enter>.
IPv6 Feature Selection enabled as more configuration allowed.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[WIRED LAN IPV6 CONFIGURATION]
IPV6 Feature Selection
IPV6 Interface ID Type
IPV6 Address
IPV6 Default Router
Preferred DNS IPV6 Address
Alternate DNS IPV6 Address
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access

[ ] Disabled
[*] Enabled
```

2. IPv6 Interface ID Type

Under the Wired LAN IPv6 Configuration select **IPv6 Interface ID Type** and press <Enter>.
The auto-configured IPv6 address consists of two parts, the IPv6 Prefix set by the IPv6 router is the first and the interface ID is following part (64 bits each).

Option	Description

Random ID	The IPv6 Interface ID is automatically generated using a random number as described in RFC 3041. This is the default option.
Intel ID	The IPv6 Interface ID is automatically generated using the MAC address.
Manual ID	The IPv6 Interface ID is configured manually. Selecting this type requires that the Manual Interface ID is set with a valid value.

To select Manual ID

1. Select "Manual ID".
2. Press <Enter>. A new option of IPV6 Interface ID will be displayed below IPV6 Interface ID Type.
3. Select 'IPV6 Interface ID'.
4. Press <Enter>.
5. <Enter> preferred Manual ID.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0052/Intel(R) ME v7.0.0.1146
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                    [WIRED LAN IPV6 CONFIGURATION]
                    IPV6 Feature Selection
                    IPV6 Interface ID Type
                    IPV6 Interface ID
                    IPV6 Address
                    IPV6 Default Router
                    Preferred DNS IPV6 Address
                    Alternate DNS IPV6 Address
                    Previous Menu

                           Interface ID

        [ESC]=Exit                                     [ENTER]=Submit
```

3. IPv6 Address

Under the Wired LAN IPv6 Configuration select **IPv6 Address** and press <Enter>.
Type the IPv6 Address and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                    [WIRED LAN IPV6 CONFIGURATION]
                    IPV6 Feature Selection
                    IPV6 Interface ID Type
                    IPV6 Address
                    IPV6 Default Router
                    Preferred DNS IPV6 Address
                    Alternate DNS IPV6 Address
                    Previous Menu

  IPV6 address (e.g. 2001:db8::1428:57ab or any other valid IPV6 address)

        [ESC]=Exit                                     [ENTER]=Submit
```

4. IPv6 Default Router

Under the Wired LAN IPv6 Configuration select **IPv6 Default Router** and press <Enter>.

Type the IPv6 Default Router and press <Enter>.

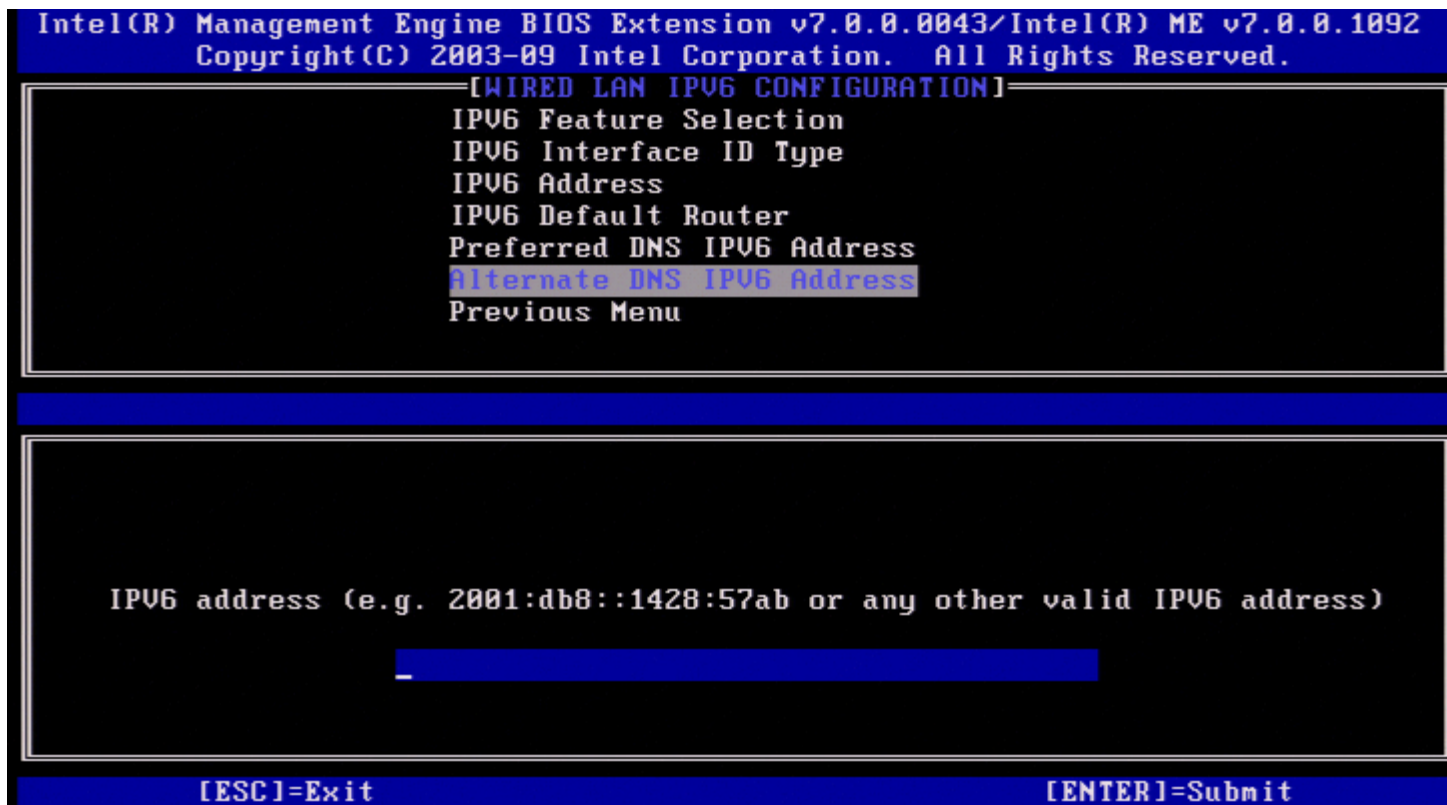
```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[WIRED LAN IPV6 CONFIGURATION]
IPV6 Feature Selection
IPV6 Interface ID Type
IPV6 Address
IPV6 Default Router
Preferred DNS IPV6 Address
Alternate DNS IPV6 Address
Previous Menu

IPV6 address (e.g. 2001:db8::1428:57ab or any other valid IPV6 address)

[ESC]=Exit                                              [ENTER]=Submit
```

5. Preferred DNS IPv6 Address

Under the Wired LAN IPv6 Configuration select **Preferred DNS IPv6 Address** and press <Enter>.
Type the Preferred DNS IPv6 Address and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[WIRED LAN IPV6 CONFIGURATION]
IPV6 Feature Selection
IPV6 Interface ID Type
IPV6 Address
IPV6 Default Router
Preferred DNS IPV6 Address
Alternate DNS IPV6 Address
Previous Menu

IPV6 address (e.g. 2001:db8::1428:57ab or any other valid IPV6 address)

[ESC]=Exit                                              [ENTER]=Submit
```

6. Alternate DNS IPv6 Address

Under the Wired LAN IPv6 Configuration select **Alternate DNS IPv6 Address** and press <Enter>.
Type the Alternate DNS IPv6 Address and press <Enter>.

Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.

[WIRED LAN IPV6 CONFIGURATION]

IPV6 Feature Selection
IPV6 Interface ID Type
IPV6 Address
IPV6 Default Router
Preferred DNS IPV6 Address
Alternate DNS IPV6 Address
Previous Menu

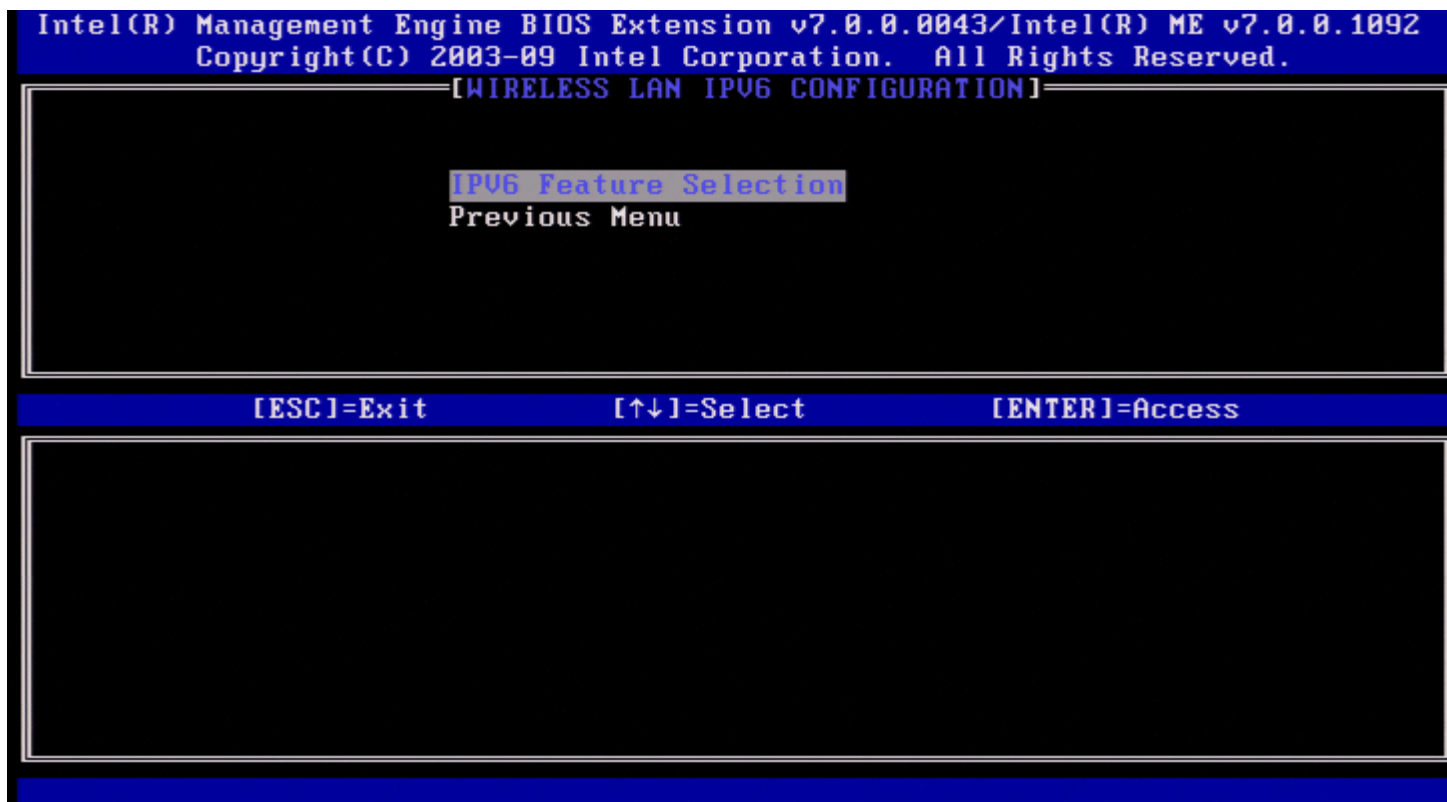
IPV6 address (e.g. 2001:db8::1428:57ab or any other valid IPV6 address)

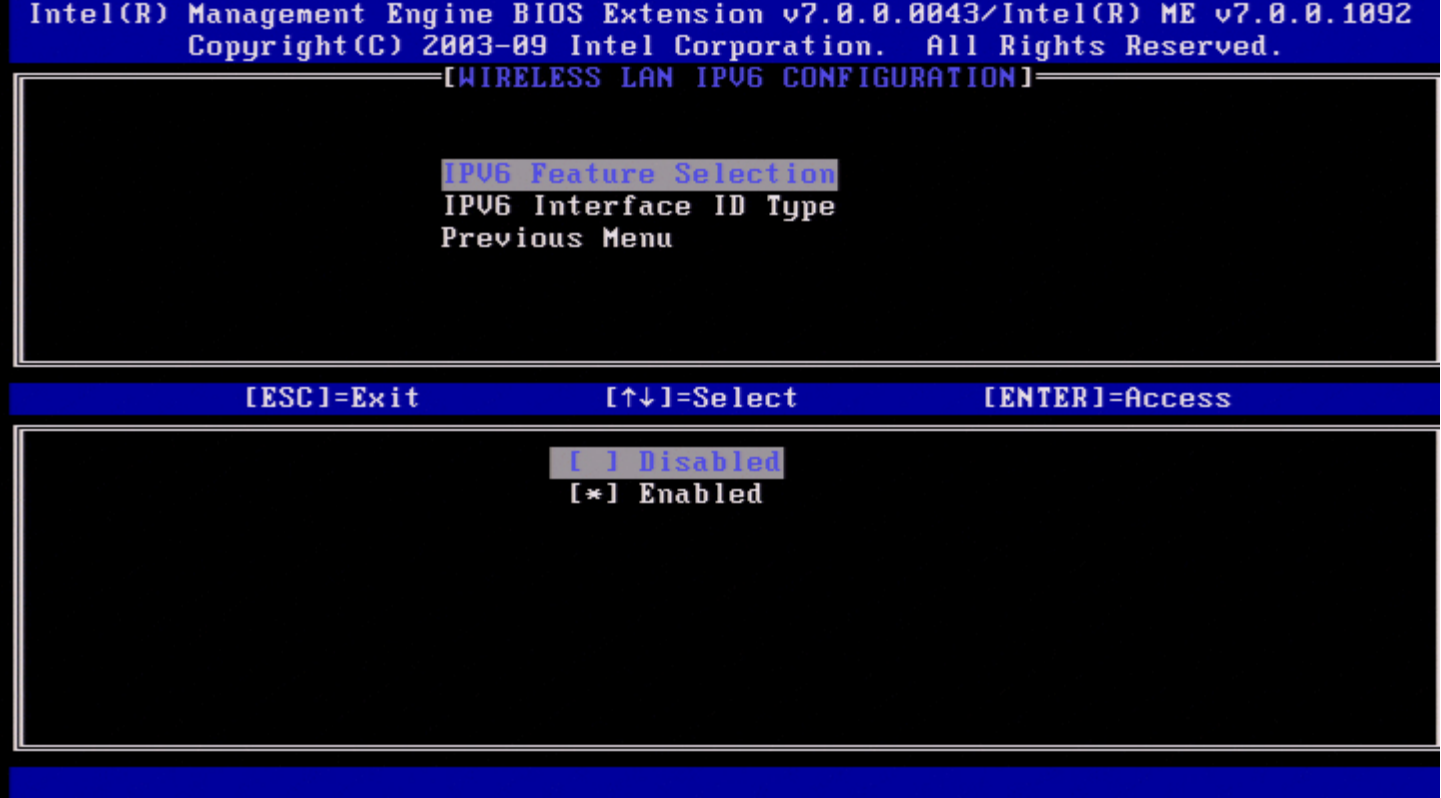
[ESC]=Exit [ENTER]=Submit

7. Previous Menu

Under the Wired LAN IPv6 Configuration select **Previous Menu** and press <Enter>.
The TCP/IP Settings menu appears.

Wireless LAN IPv6 Configuration

Under the TCP/IP Settings select **Wireless LAN IPv6 Configuration** and press <Enter>.
The Wireless LAN IPv6 Configuration page appears.

1. IPv6 Feature Selection

Under the Wireless LAN IPv6 Configuration select **IPv6 Feature Selection** and press <Enter>.

2. IPv6 Interface ID Type

Under the Wired LAN IPv6 Configuration select **IPv6 Interface ID Type** and press <Enter>.
The auto-configured IPv6 address consists of two parts:

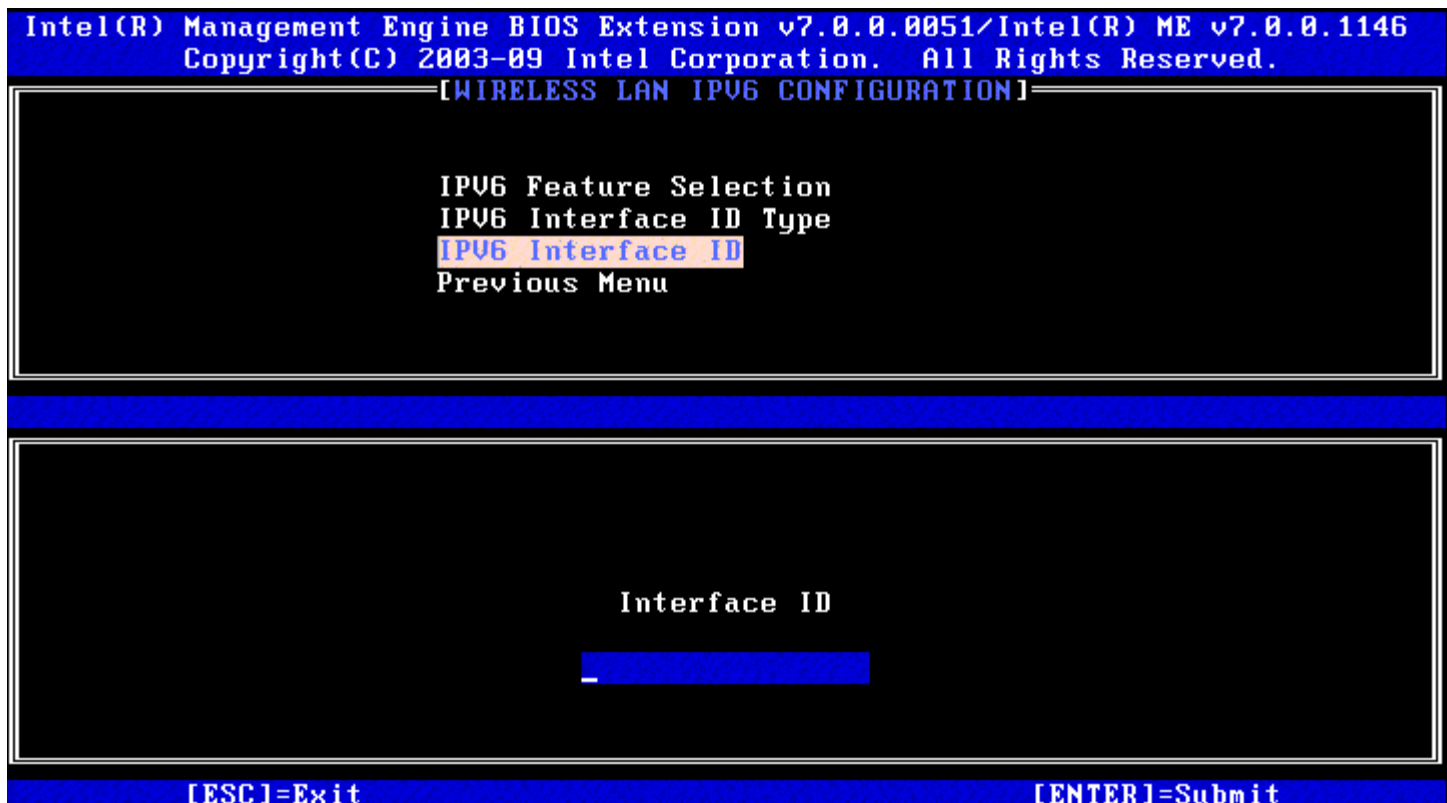
- IPv6 Prefix (set by the IPv6 router)
- Interface ID (64 bits each)

Option	Description
Random ID	The IPv6 Interface ID is automatically generated using a random number as described in RFC 3041. This is the default option.
Intel ID	The IPv6 Interface ID is automatically generated using the MAC address.
Manual ID	The IPv6 Interface ID is configured manually. Selecting this type requires that the Manual Interface ID is set with a valid value.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[WIRELESS LAN IPV6 CONFIGURATION]

IPV6 Feature Selection
IPV6 Interface ID Type
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access

[*] Random ID
[ ] Intel ID
[ ] Manual ID
```

To select Manual ID:

1. Select **Manual ID**.
2. Press <Enter>. A new option of IPV6 Interface ID will be displayed below IPV6 Interface ID Type.
3. Select **IPV6 Interface ID**.
4. Press <Enter>.
5. Type the preferred Manual ID.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0051/Intel(R) ME v7.0.0.1146
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[WIRELESS LAN IPV6 CONFIGURATION]

IPV6 Feature Selection
IPV6 Interface ID Type
IPV6 Interface ID
Previous Menu

Interface ID
_

[ESC]=Exit                              [ENTER]=Submit
```

3. Previous Menu

Under the Wireless LAN IPv6 Configuration select **Previous Menu** and press <Enter>.
The TCP/IP Settings menu appears.

Previous Menu

Under the TCP/IP Setting menu select **Previous Menu** and press <Enter>.
The Intel ME Network Setup menu appears.

Previous Menu

Under the Intel ME Network Setup menu select **Previous Menu** and press <Enter>.
The AMT Configuration menu appears.

Activate Network Access

Under the Intel AMT Configuration page select **Activate Network Access** and press <Enter>.
Press '**Y**' to activate or press '**N**' to cancel.

Activate Network Access causes the Intel ME to transition to the POST provisioning state if all required settings are configured. Without Activating Network Access, ME will not be able to connect to the network.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
      Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                  [INTEL(R) AMT CONFIGURATION]
                      SOL/IDER/KVM                      ►
                      User Consent                      ►
                      Password Policy
                      Network Setup                     ►
                      Activate Network Access
                      Unconfigure Network Access
                      Remote Setup And Configuration    ►
                      Previous Menu

        [ESC]=Exit          [↑↓]=Select          [ENTER]=Access

                          [CAUTION]
               Activates the current network settings
             and opens the Intel(R) ME network interface
                        Continue:(Y/N)
```

 NOTE: Power policy will change to PP2 after activating if the default power policy is set to PP1.

Unconfigure Network Access

Under the Intel ME Platform Configuration menu select **Unconfigure Network Access** and press <Enter>.

 NOTE: This will cause Intel ME to transition to the PRE provisioning state.

Select **Y** to unconfigure.

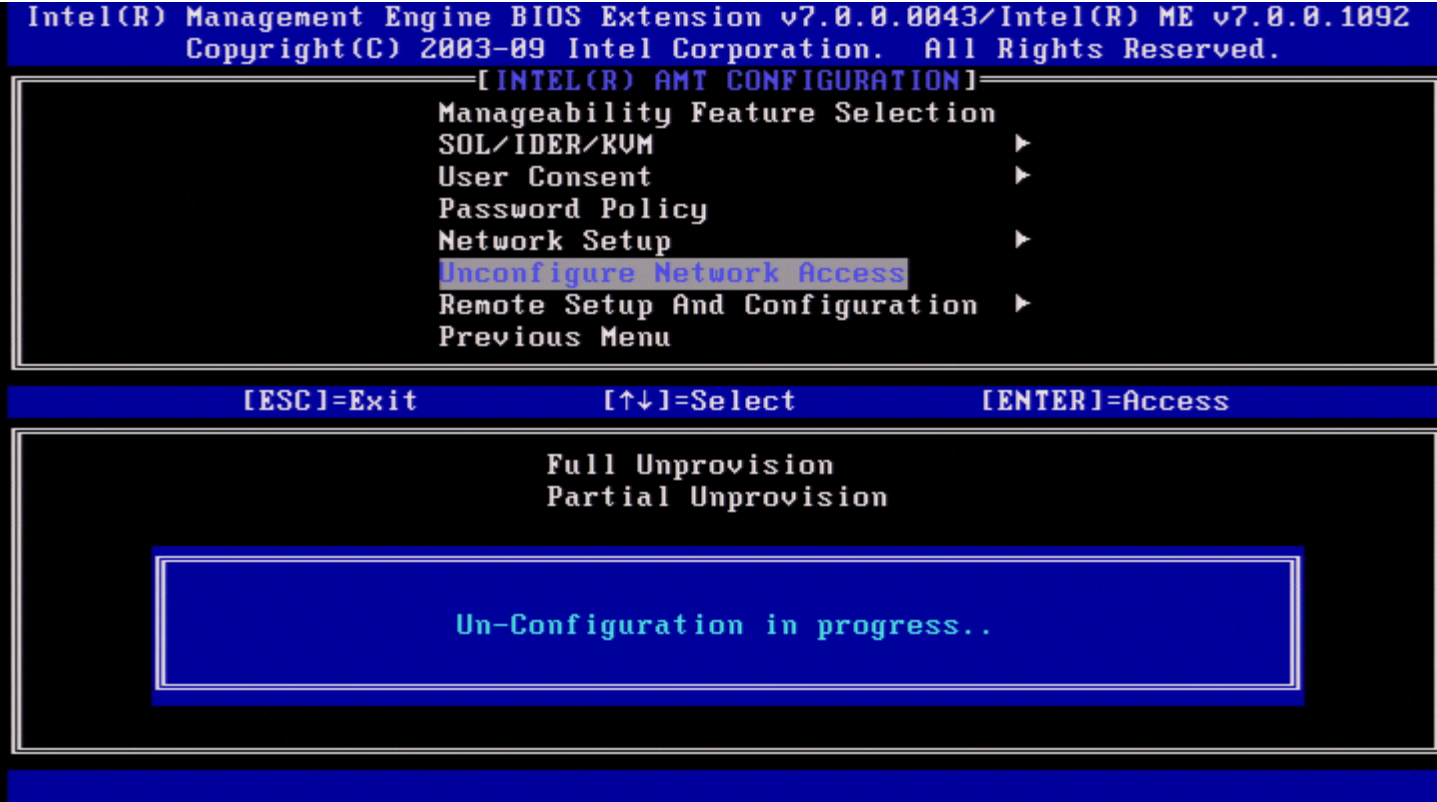
```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) AMT CONFIGURATION]
Manageability Feature Selection
SOL/IDER/KVM                          ►
User Consent                          ►
Password Policy
Network Setup                         ►
Unconfigure Network Access
Remote Setup And Configuration        ►
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access

[CAUTION]
Resets network settings including network ACLs
to factory defaults.
Continue:(Y/N)
```

Select **Full Unprovisioning** and press <Enter>.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) AMT CONFIGURATION]
Manageability Feature Selection
SOL/IDER/KVM                          ►
User Consent                          ►
Password Policy
Network Setup                         ►
Unconfigure Network Access
Remote Setup And Configuration        ►
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access

Full Unprovision
Partial Unprovision
```

Option	Description
Full Unprovision	The IPv6 Interface ID is automatically generated using a random number as described in RFC 3041. This is the default. Full unprovision will unprovision AMT and remove all the PID/PPS

	information or any new certificate information populated.
Partial Unprovision	The IPv6 Interface ID is automatically generated using the MAC address. Partial Unprovisoin will unprovision AMT but will retain PID/PPD information entered or any new certification information entered.

Unprovisioning in progress.

Remote Setup and Configuration

Under the Intel AMT Configuration select **Remote Setup and Configuration** and press <Enter>.
The Intel Automated Setup and Configuration page appears.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) AUTOMATED SETUP AND CONFIGURATION]
Current Provisioning Mode
Provisioning Record
RCFG                    ►
Provisioning Server IPV4/IPV6
Provisioning Server FQDN
TLS PSK                 ►
TLS PKI                 ►
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access
```

Current Provisioning Mode

Under the Automated Setup and Configuration select **Current Provisioning Mode** and press <Enter>.
Current Provisioning Mode – Displays the current provisioning TLS Mode: None, PKI, or PSK.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) AUTOMATED SETUP AND CONFIGURATION]
Current Provisioning Mode
Provisioning Record
RCFG                    ►
Provisioning Server IPV4/IPV6
Provisioning Server FQDN
TLS PSK                 ►
TLS PKI                 ►
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access

Provisioning Mode: PKI
```

Provisioning Record

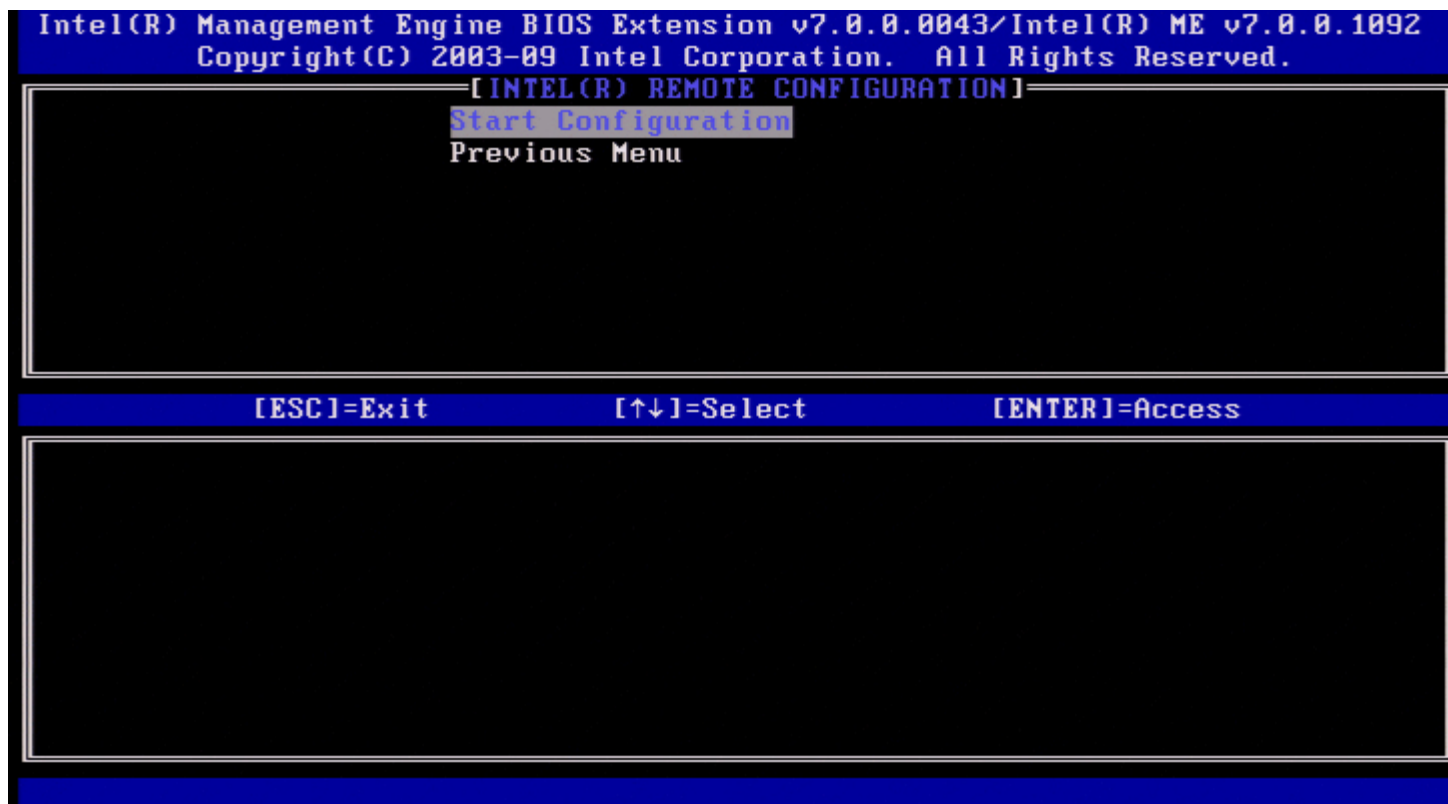
Under the Automated Setup and Configuration select **Provisioning Record** and press <Enter>.
Provisioning Record – Displays the system's provision PSK/PKI record data. If the data has not been entered, the Intel MEBx displays a message stating "*Provision Record not present*".

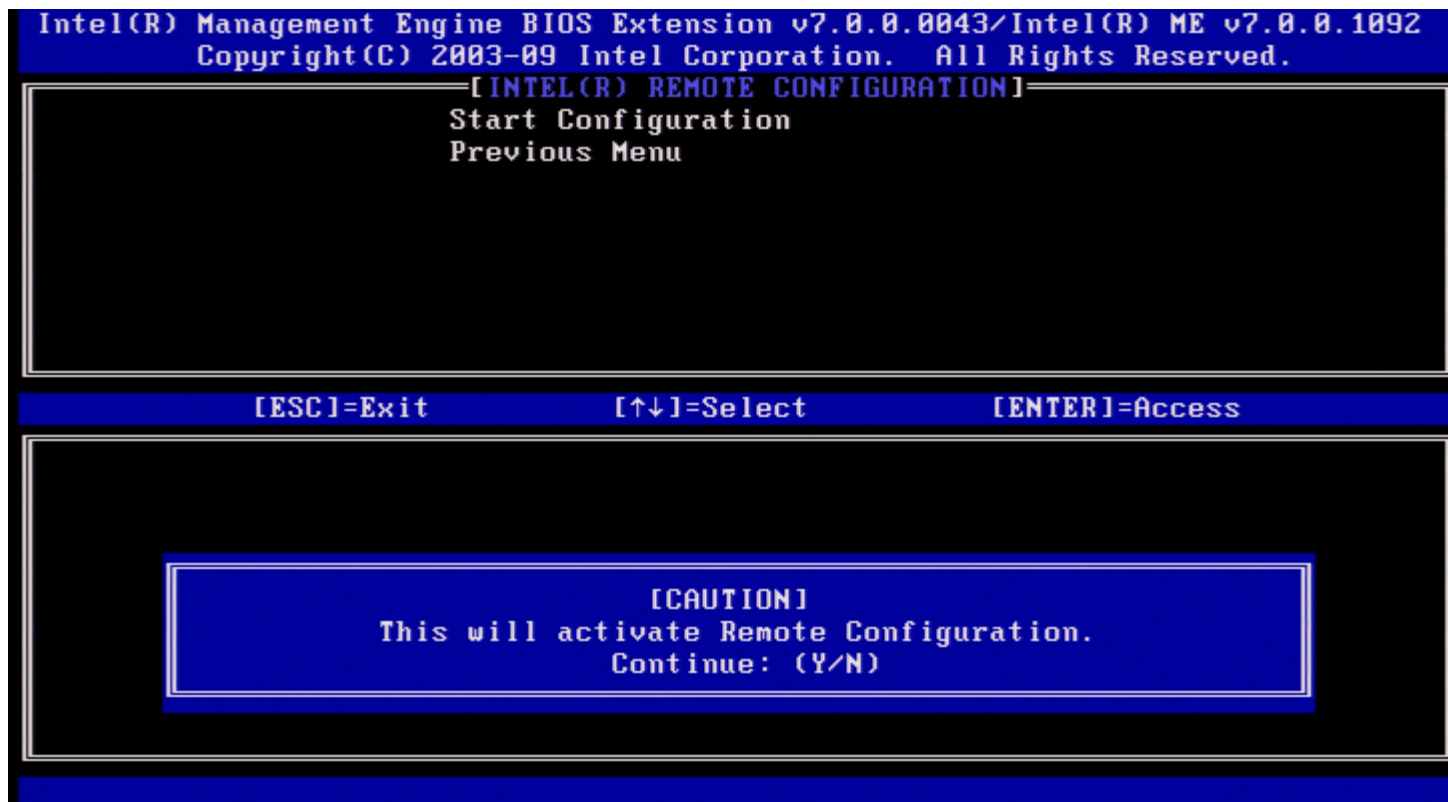
If the data is entered, the Provision record will display as below:

Option	Description
TLS provisioning mode	Displays the current configuration mode of the system: None, PSK or PKI.
Provisioning IP	The IP address of the setup and configuration server.
Date of Provision	Displays the date and time of the provisioning in the format MM/DD/YYYY at HH:MM.
DNS	Indicates whether the "PKI DNS Suffix" was configured in Intel MEBx before remote configuration took place or not. A value of 0 indicates that the DNS Suffix was not configured and the firmware will rely on DHCP option 15 and compare this suffix to the FQDN in the Configuration Server's client certificate. A value of 1 indicates that the DNS Suffix was configured and the firmware matched it against the DNS Suffix in the Configuration Server's client certificate. Host Initiated –Indicates whether the setup and configuration process was initiated by the host: 'No' indicates that the setup and configuration process was NOT host-initiated, 'Yes' indicates the setup and configuration process was host-initiated (PKI only).
Hash Data	Displays the 40-character certificate hash data (PKI only).
Hash Algorithm	Describes the hash type. Currently only SHA1 is supported. (PKI only).
IsDefault	Displays 'Yes' if the Hash algorithm is the default algorithm selected. Displays 'No' if the hash algorithm is NOT the default algorithm used (PKI only).
FQDN	FQDN of the provisioning server mentioned in the certificate (PKI only).
Serial Number	The 32-character string that indicates the Certificate Authority serial numbers.
Time Validity Pass	Indicates whether the certificate passed the time validity check.

RCFG

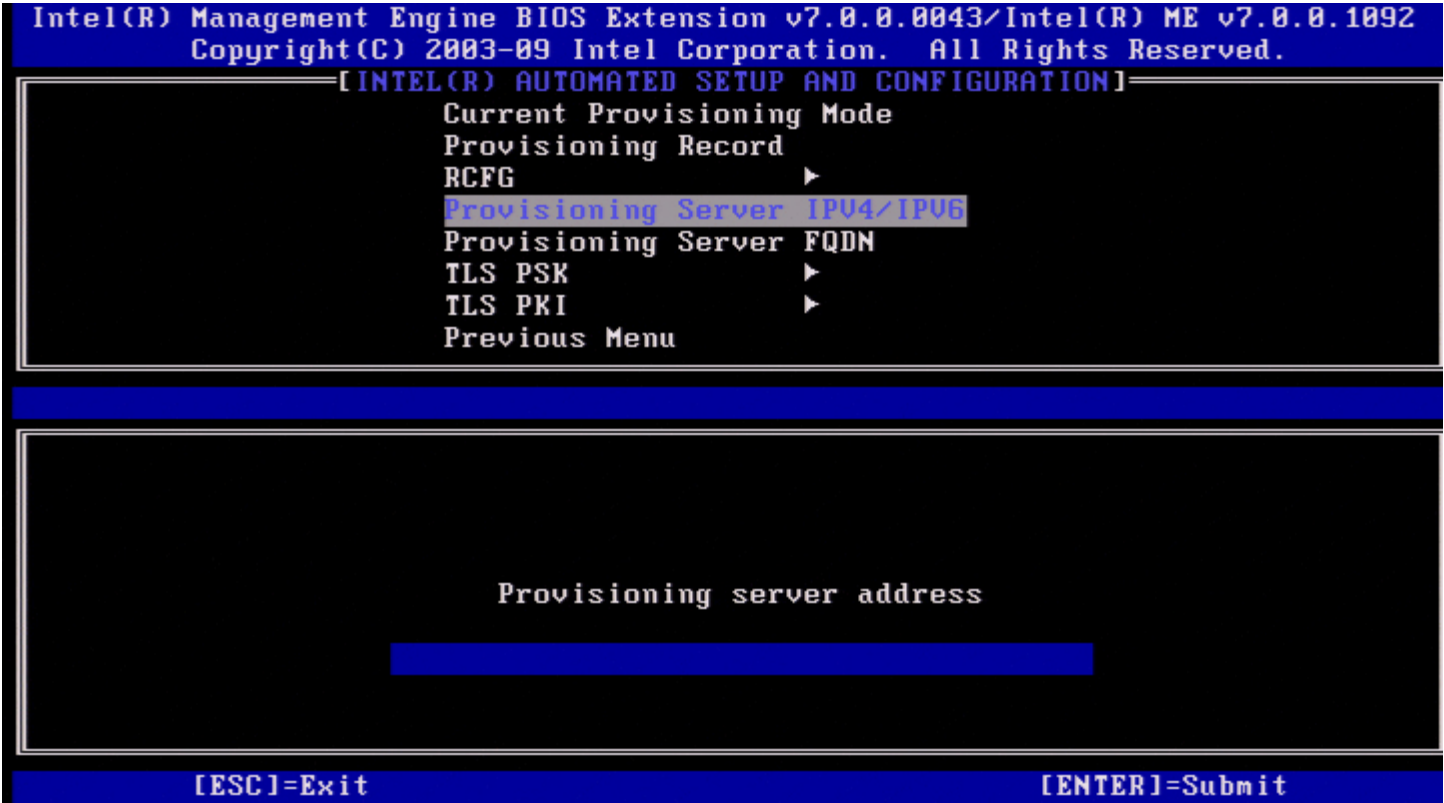
Under the Intel Automated Remote Setup and Configuration menu select **RCFG** and press <Enter>.
The Intel Remote Configuration page appears.

Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[INTEL(R) REMOTE CONFIGURATION]
Start Configuration
Previous Menu
[ESC]=Exit [↑↓]=Select [ENTER]=Access

Start Configuration

Under the Intel Remote Configuration menu select **Start Configuration** and press <Enter>.
If Remote Configuration is not activated, Remote configuration cannot occur.
To activate (enable) remote configuration, select **Y**.

Previous Menu

Under the Intel Remote Configuration menu select **Previous Menu** and press <Enter>.
The Intel Automated Setup and Configuration page appears.

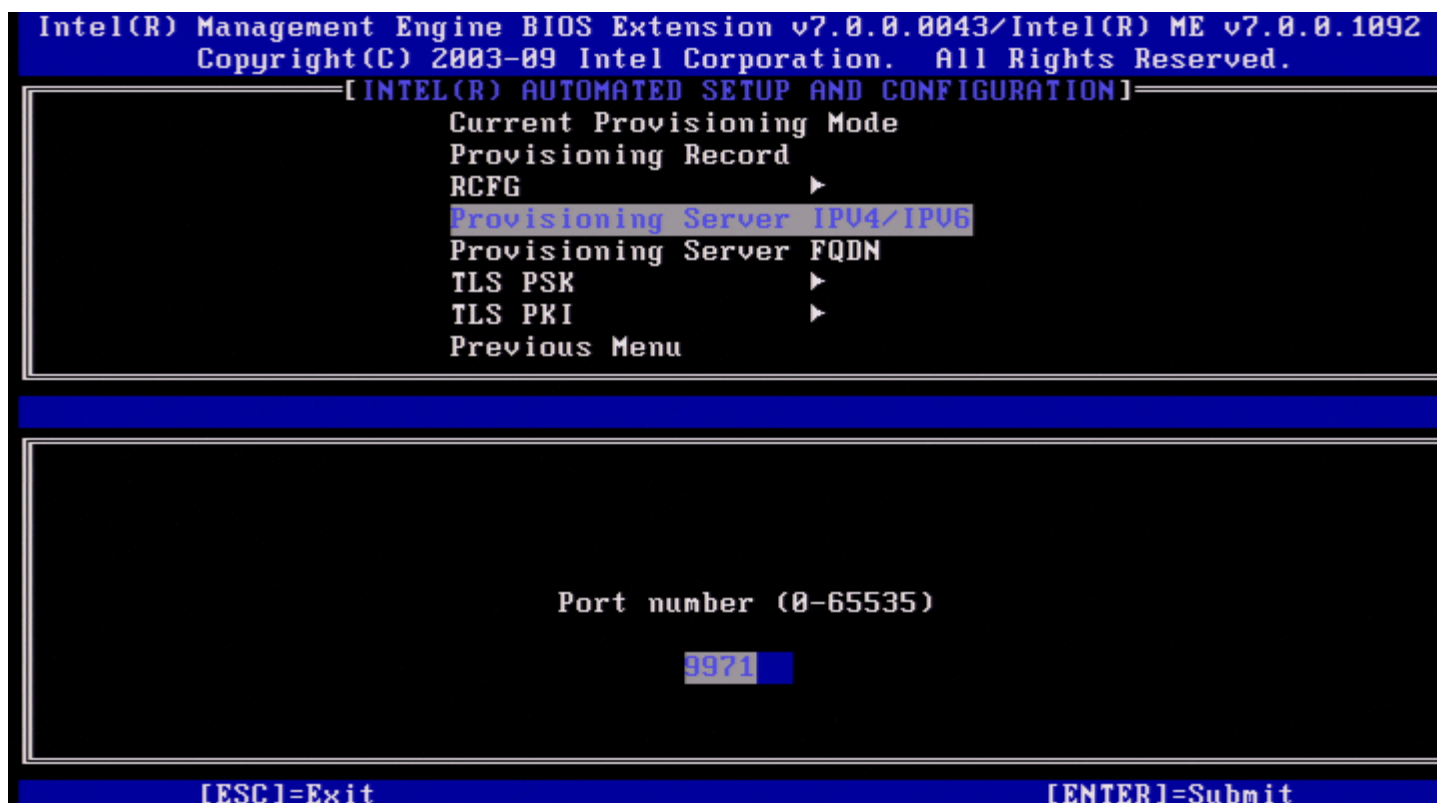
Provisioning Server IPv4/IPv6

Under the Intel Automated Setup and Configuration menu select **Provisioning Server IPv4/IPv6** and press <Enter>.
1. Type provisioning server address and press <Enter>.

2. Type provisioning server port number and press <Enter>.
The port number (0 – 65535) of the Intel AMT provisioning server. The default port number is 9971.

Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[INTEL(R) AUTOMATED SETUP AND CONFIGURATION]
Current Provisioning Mode
Provisioning Record
RCFG ►
Provisioning Server IPV4/IPV6
Provisioning Server FQDN
TLS PSK ►
TLS PKI ►
Previous Menu

Port number (0-65535)

9971

[ESC]=Exit [ENTER]=Submit

Provisioning Server FQDN

Under the Intel Automated Remote Setup and Configuration menu select **Provisioning Server FQDN** and press <Enter>. Type the FQDN of the provisioning server and press <Enter>.

Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[INTEL(R) AUTOMATED SETUP AND CONFIGURATION]
Current Provisioning Mode
Provisioning Record
RCFG ►
Provisioning Server IPV4/IPV6
Provisioning Server FQDN
TLS PSK ►
TLS PKI ►
Previous Menu

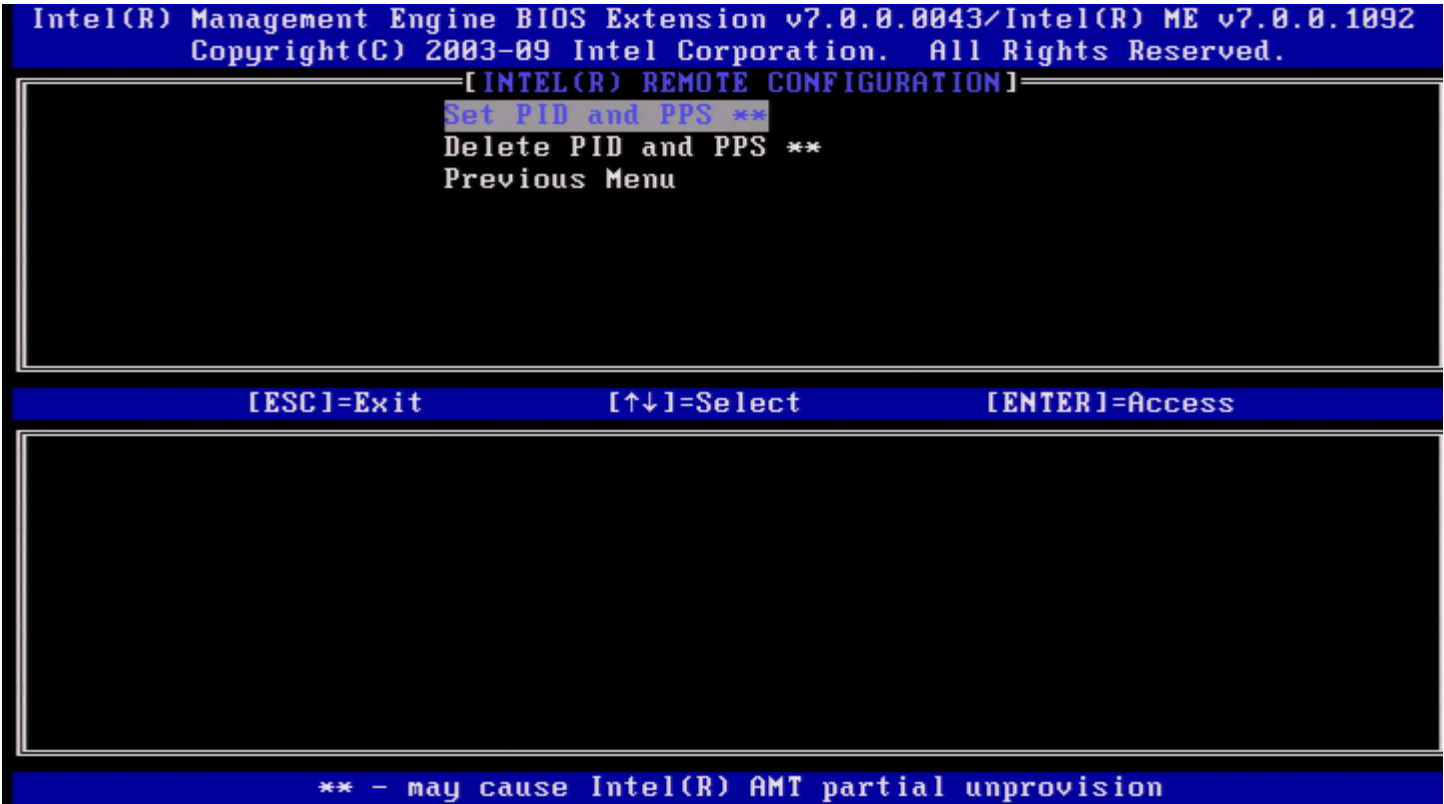
Enter FQDN of provisioning server

[ESC]=Exit [ENTER]=Submit

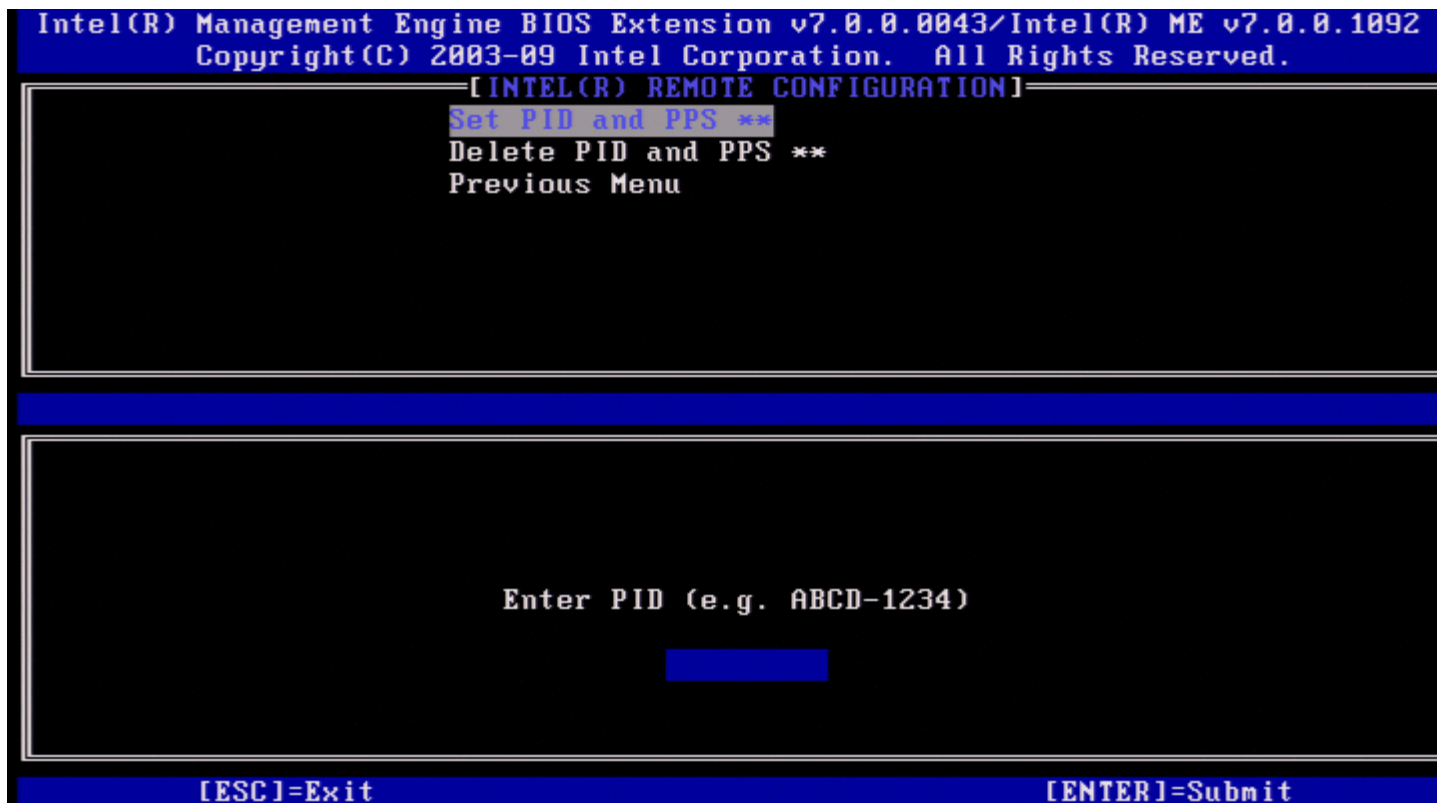
FQDN of the provisioning server mentioned in the certificate (PKI only). This is also the FQDN of the server that AMT sends hello packets to for both PSK and PKI.

TLS PSK

Under the Intel Automated Setup and Configuration menu select **TLS PSK** and press <Enter>.
The Intel TLS PSK Configuration page appears.

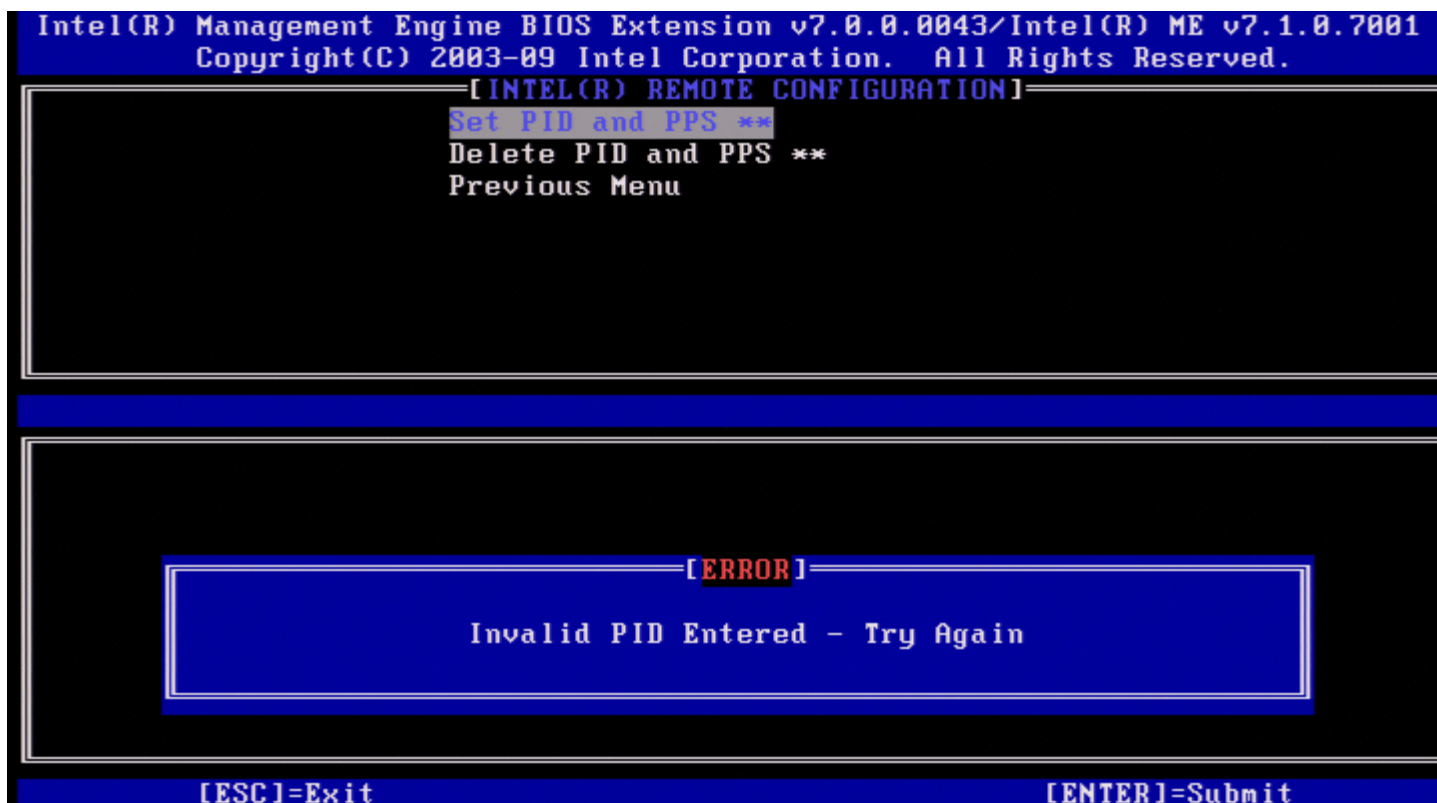
This submenu contains the settings for TLS PSK configuration settings

Set PID and PPS

Under the Intel TLS PSK Configuration menu select **Set PID and PPS** and press <Enter>.
Type the PID and press <Enter>.
Type the PPS and press <Enter>.

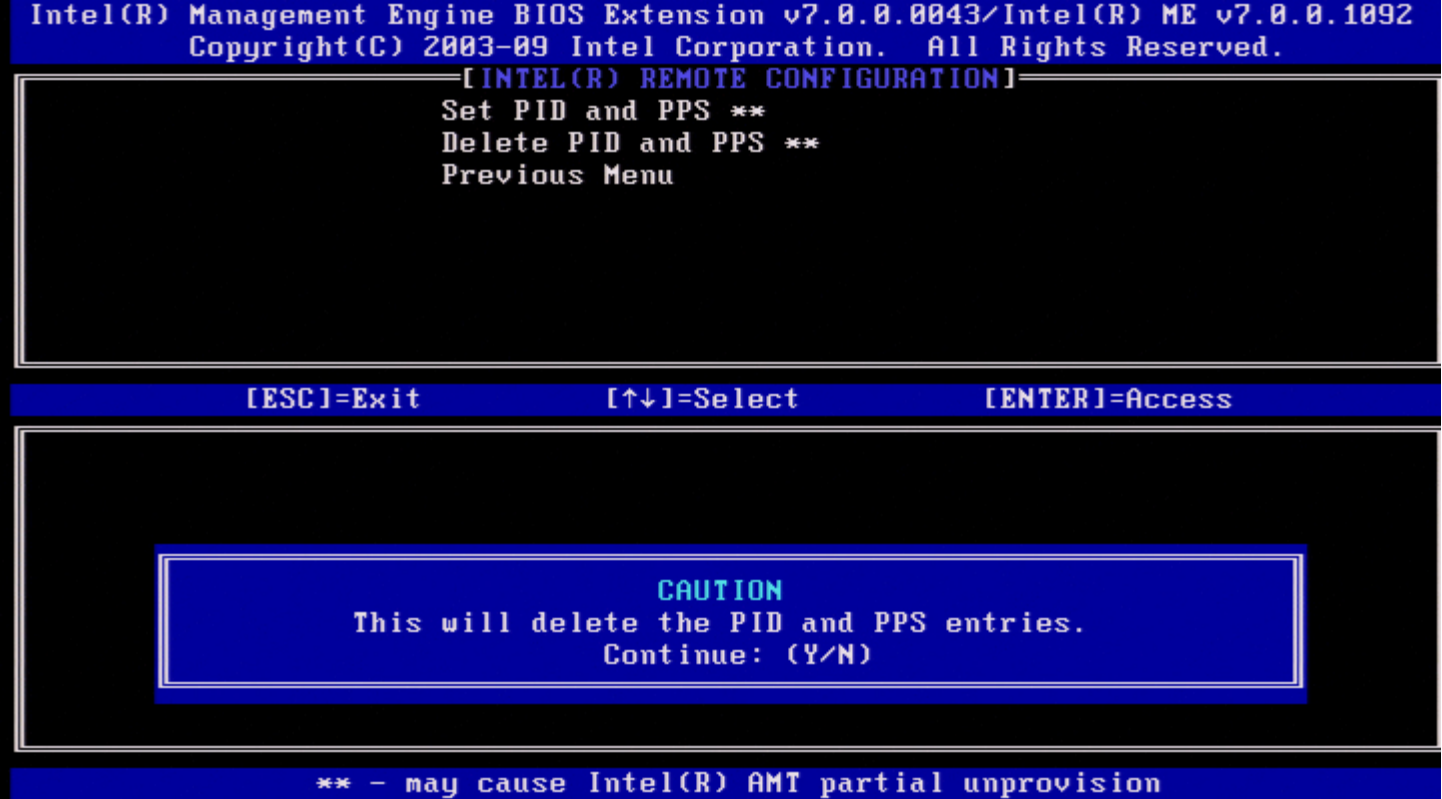
```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) REMOTE CONFIGURATION]
Set PID and PPS **
Delete PID and PPS **
Previous Menu

Enter PID (e.g. ABCD-1234)

[ESC]=Exit                                    [ENTER]=Submit
```

Setting the PID/PPS will cause a partial unprovision if the setup and configuration is "In-process". The PID and PPS should be entered in the dash format. (for example: PID: 1234-ABCD ; PPS: 1234-ABCD-1234-ABCD-1234-ABCD-1234-ABCD).

 NOTE: A PPS value of '0000-0000-0000-0000-0000-0000-0000-0000' will not change the setup configuration state. If this value is used, the setup and configuration state will remain 'Not-started'.

If an invalid entry is attempted, an error message will be displayed:

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.1.0.7001
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) REMOTE CONFIGURATION]
Set PID and PPS **
Delete PID and PPS **
Previous Menu

[ERROR]
Invalid PID Entered - Try Again

[ESC]=Exit                                    [ENTER]=Submit
```

Delete PID and PPS

Under the Intel TLS PSK Configuration menu select **Delete PID and PPS** and press <Enter>.
This option deletes the current PID and PPS stored in Intel ME. If the PID and PPS were not entered previously, the Intel MEBx will return an error message.

To delete the PID and PPS entries, select **Y**, else **N**.

Previous Menu

Under the Intel TLS PSK Configuration menu select **Previous Menu** and press <Enter>.
The Intel Automated Setup and Configuration page appears.

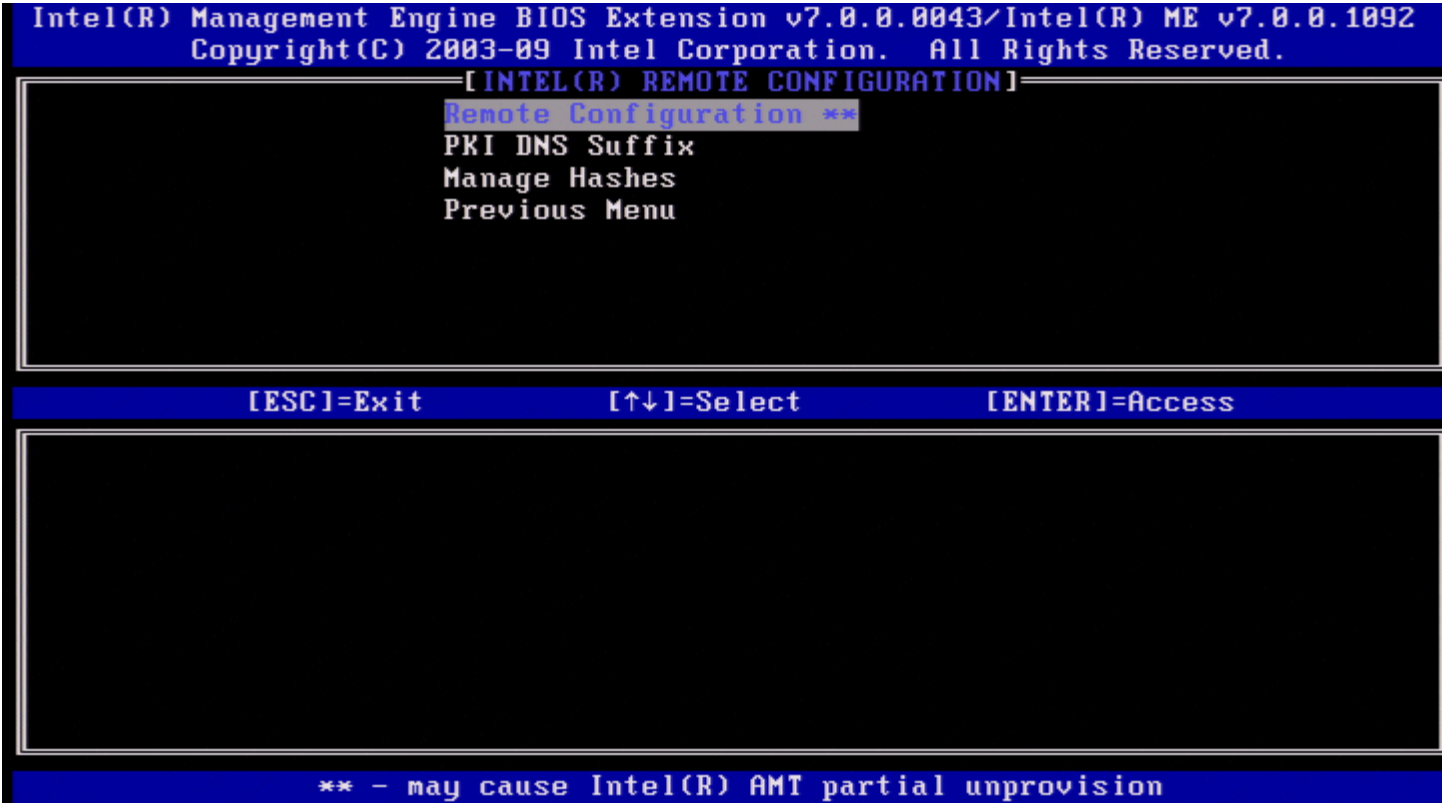
TLS PKI

Under the Intel Automated Setup and Configuration menu select **TLS PKI** and press <Enter>.
The Intel Remote Configuration page appears.

Remote Configuration

Under the Intel Remote Configuration menu select **Remote Configuration** and press <Enter>.
Enabling/Disabling Remote configuration will cause a partial un-provision, if the setup and configuration server is "In-process".

Option	Description
Disabled	Remote configuration is disabled. Only 'Remote Configuration' and 'Previous Menu' items are visible. To disable, select this option and press <Enter>.
Enabled	Remote configuration is enabled, this will show additional fields. To enable, select this option and press .

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) REMOTE CONFIGURATION]
Remote Configuration **
PKI DNS Suffix
Manage Hashes
Previous Menu

[ESC]=Exit          [↑↓]=Select          [ENTER]=Access

** - may cause Intel(R) AMT partial unprovision
```

PKI DNS Suffix

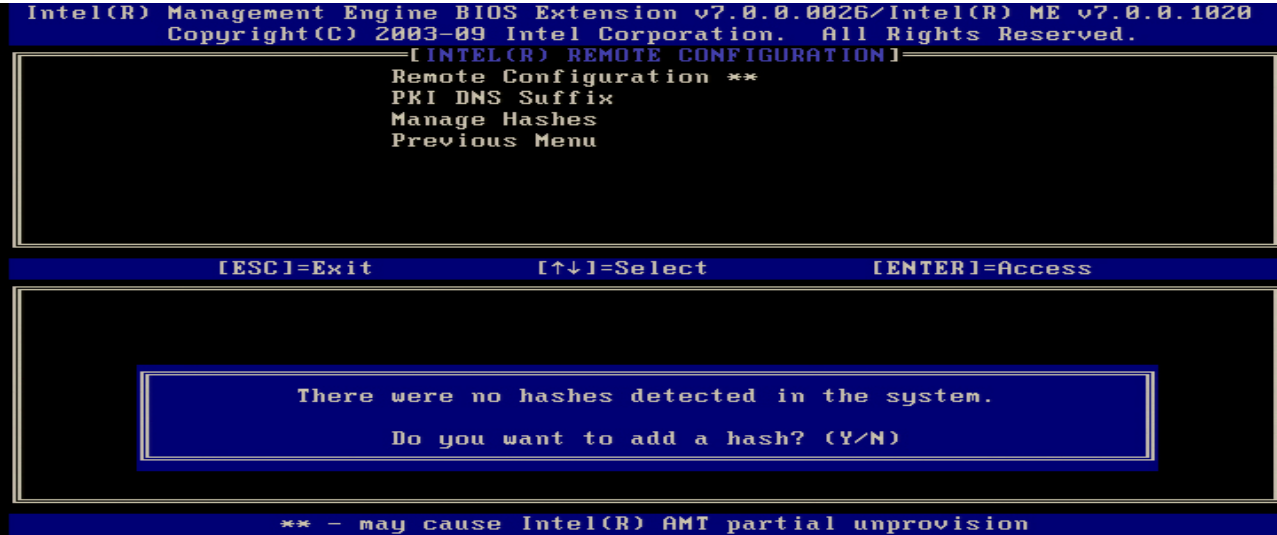
Under the Intel Remote Configuration menu select **PKI DNS Suffix** and press <Enter>.
Type the PKI DNS Suffix and press <Enter>. Key Value will be maintained in the EPS.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) REMOTE CONFIGURATION]
Remote Configuration **
PKI DNS Suffix
Manage Hashes
Previous Menu

Enter PKI DNS Suffix
_

[ESC]=Exit                                   [ENTER]=Submit
```

Manage Hashes

Under the Intel Remote Configuration menu select **Manage Hashes** and press <Enter>.

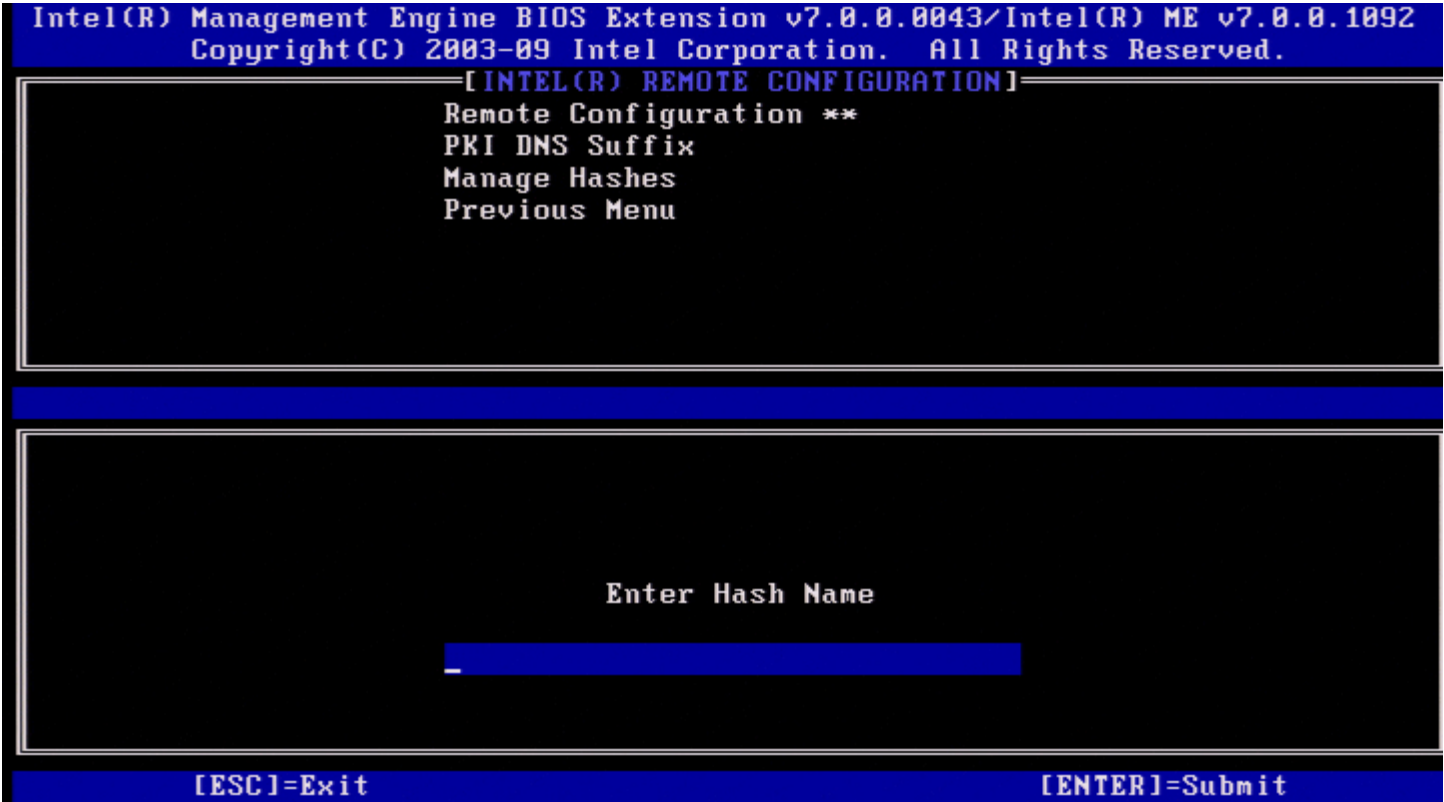
```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                    [INTEL(R) REMOTE CONFIGURATION]
                         Remote Configuration **
                         PKI DNS Suffix
                         Manage Hashes
                         Previous Menu

    Hash Name                        Active    Default    Algorithm Type
    VeriSign Class 3 Primary CA-G1    [*]       [*]          SHA1
    VeriSign Class 3 Primary CA-G3    [*]       [*]          SHA1
    Go Daddy Class 2 CA               [*]       [*]          SHA1
    Comodo AAA CA                     [*]       [*]          SHA1
    Starfield Class 2 CA              [*]       [*]          SHA1
    VeriSign Class 3 Primary CA-G2    [*]       [*]          SHA1
    VeriSign Class 3 Primary CA-G1.5  [*]       [*]          SHA1
    VeriSign Class 3 Primary CA-G5    [*]       [*]          SHA1

    [ESC]=Exit   [INS]=Add   [DEL]=Del   [+]=Active   [ENTER]=View
```

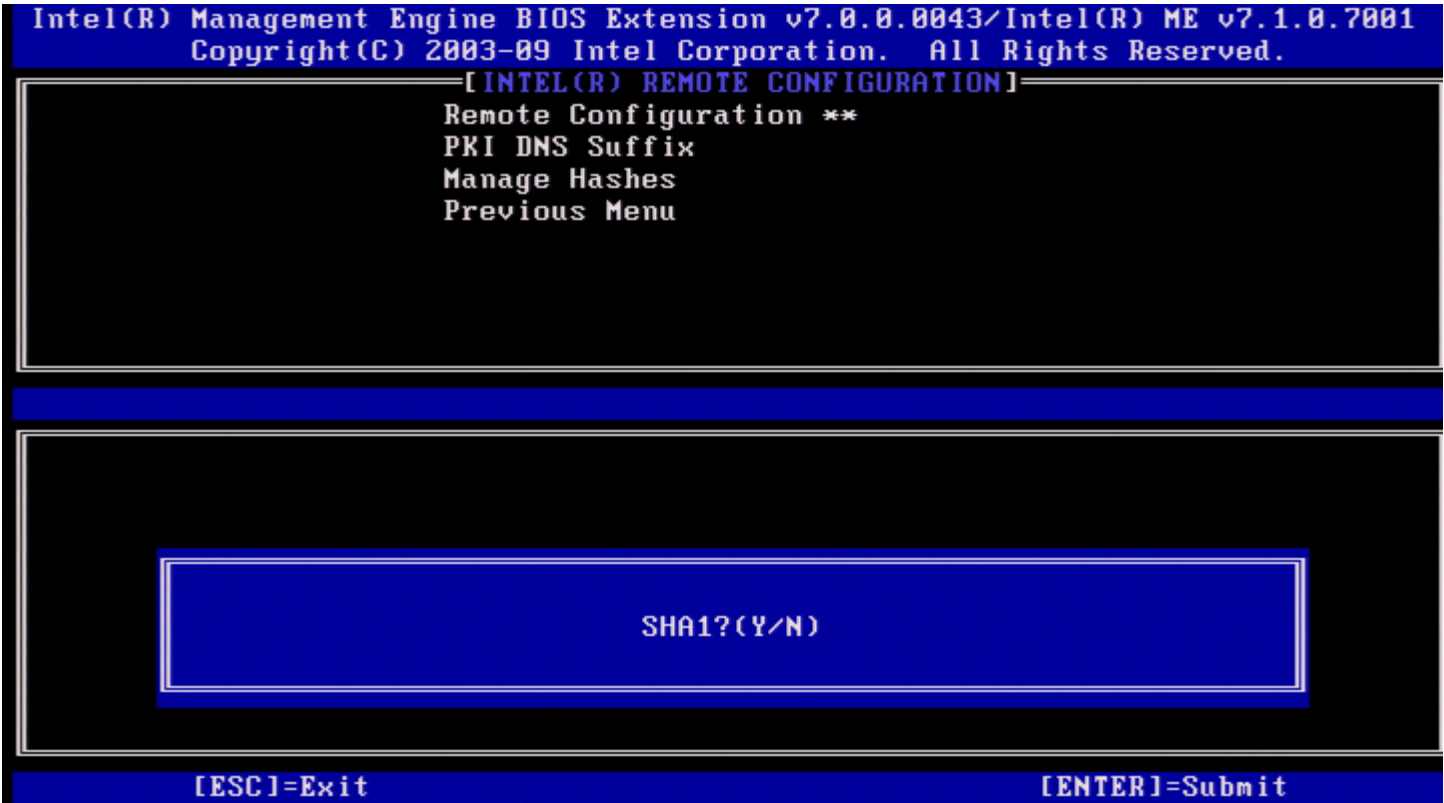
Selecting this option will enumerate the hashes in the system and display the Hash Name and the active and default state. If the system does not contain any hashes yet, Intel MEBx will display the following screen.

Answering 'Yes' will begin the process of adding customized hash. The Manage Certificate Hash screen provides keyboard controls for managing the hashes on the system. The following keys are valid when in the Manage Certificate Hash menu.

Key	Description
Escape	Exits from the menu.
Insert	Adds a customized certificate hash to the system.
Delete	Deletes the currently selected certificate hash from the system.
+	Changes the active state of the currently selected certificate hash.
<Enter>	Displays the details of the currently selected certificate hash.

Adding Customized Hash

When the Insert key is pressed in the Manage Certificate Hash screen, the following screen is displayed.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                         [INTEL(R) REMOTE CONFIGURATION]
                         Remote Configuration **
                         PKI DNS Suffix
                         Manage Hashes
                         Previous Menu

                                  Enter Hash Name
                         _

         [ESC]=Exit                                             [ENTER]=Submit
```

To add a customized certificate hash: Type the hash name (up to 32 characters). When you press <Enter>, you are prompted to select the algorithm of hash being used for PKI provisioning. Type **Y** if SHA1 is being used, otherwise enter **N**.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.1.0.7001
        Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
                         [INTEL(R) REMOTE CONFIGURATION]
                         Remote Configuration **
                         PKI DNS Suffix
                         Manage Hashes
                         Previous Menu

                                    SHA1?(Y/N)

         [ESC]=Exit                                             [ENTER]=Submit
```

The supported hash algorithms are:

1. SHA1
2. SHA2-256

3. SHA2-384

If SHA1 is not chosen, in the next screen you are prompted to select the option of supported SHA2 algorithm. Type **Y** if SHA256 is being used, otherwise enter **N**.

Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.1.0.7001
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.

[INTEL(R) REMOTE CONFIGURATION]

Remote Configuration **
PKI DNS Suffix
Manage Hashes
Previous Menu

SHA256?(Y/N)

[ESC]=Exit [ENTER]=Submit

When SHA256 is not chosen, in the next screen, type **Y** to select SHA2-384.

Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.1.0.7001
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.

[INTEL(R) REMOTE CONFIGURATION]

Remote Configuration **
PKI DNS Suffix
Manage Hashes
Previous Menu

SHA384?(Y/N)

[ESC]=Exit [ENTER]=Submit

If **N** is entered, an error message will be shown to prompt the user to select one supported algorithm.

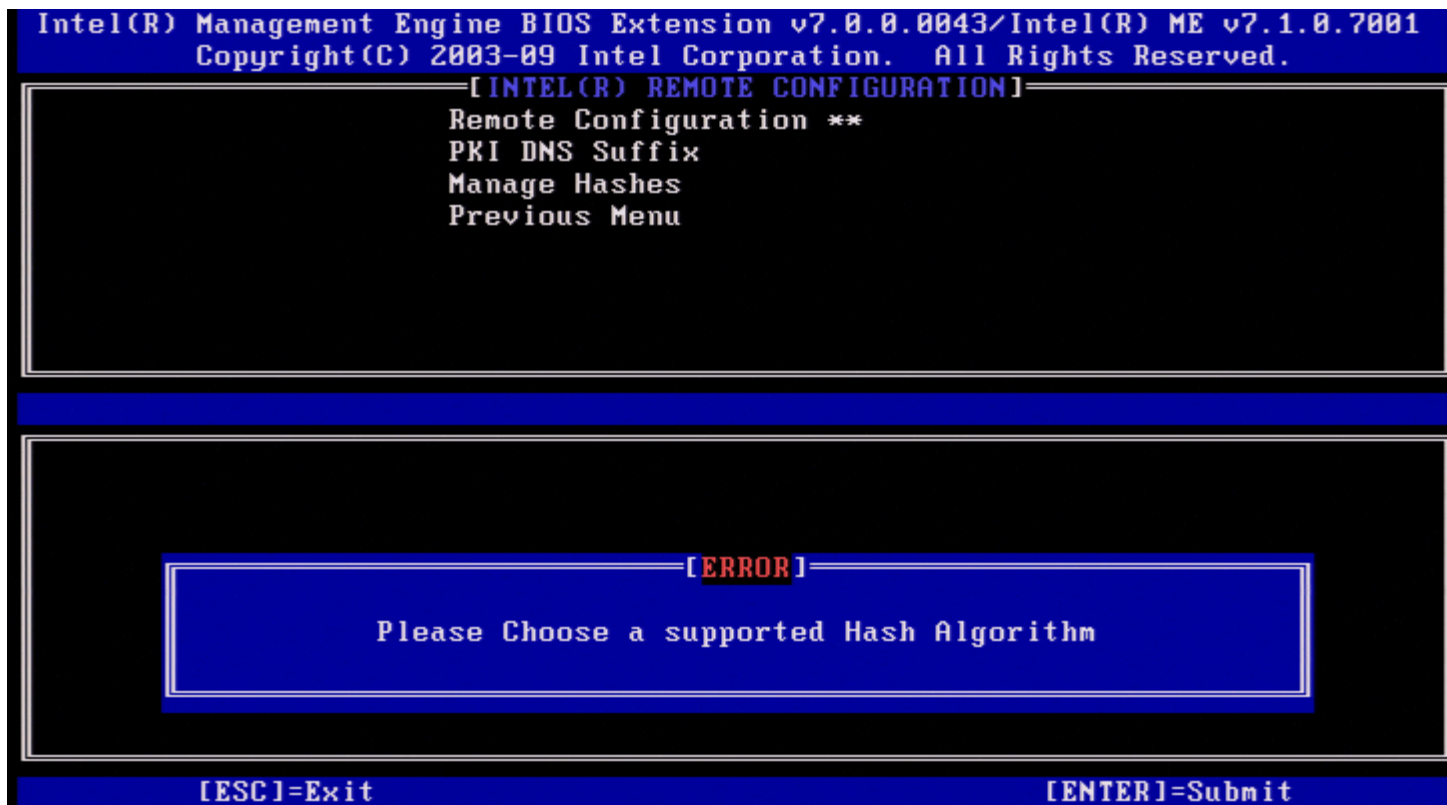
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.1.0.7001
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.

[INTEL(R) REMOTE CONFIGURATION]

Remote Configuration **
PKI DNS Suffix
Manage Hashes
Previous Menu

[ERROR]

Please Choose a supported Hash Algorithm

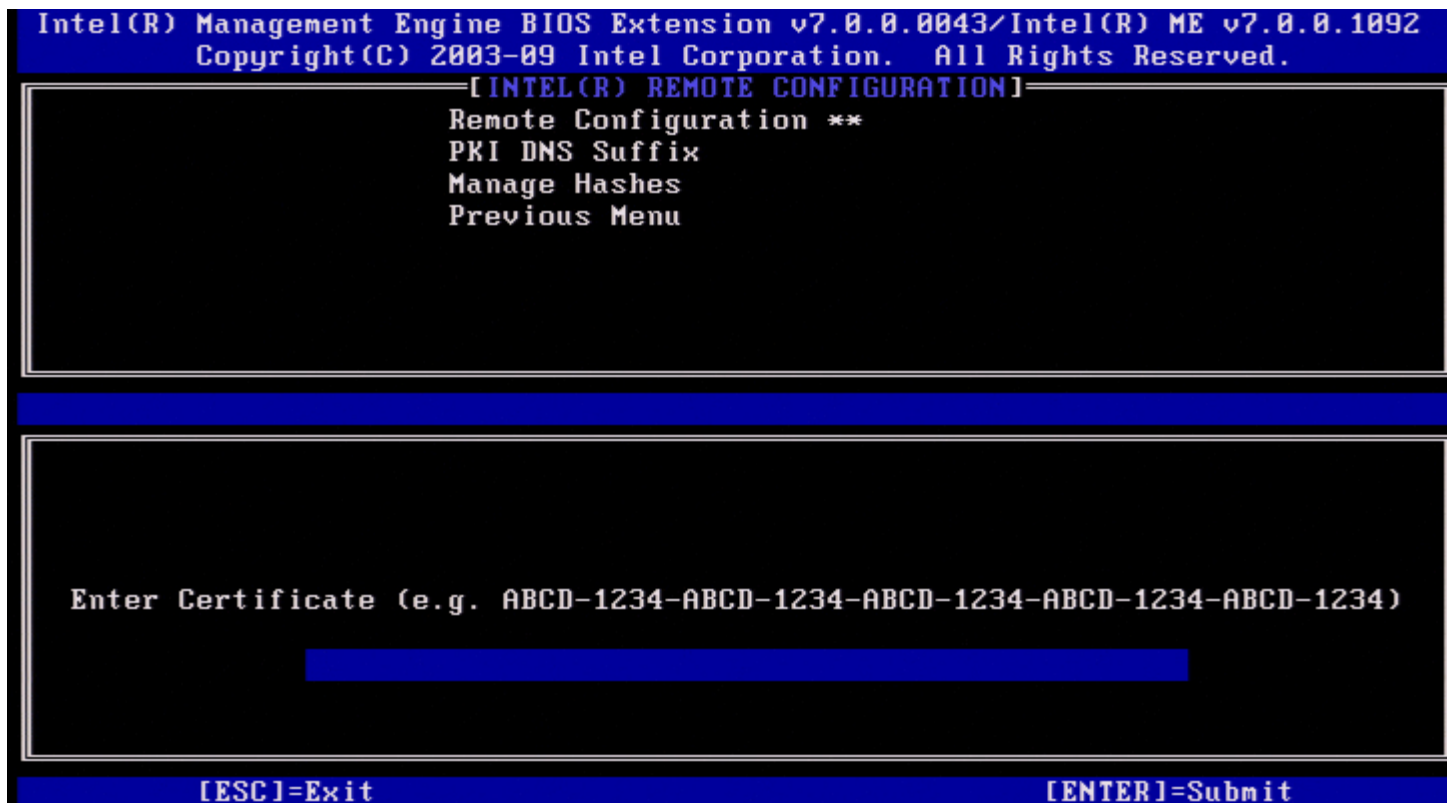
[ESC]=Exit [ENTER]=Submit

After selecting desired Hash Algorithm, you are prompted to type the certificate hash value.

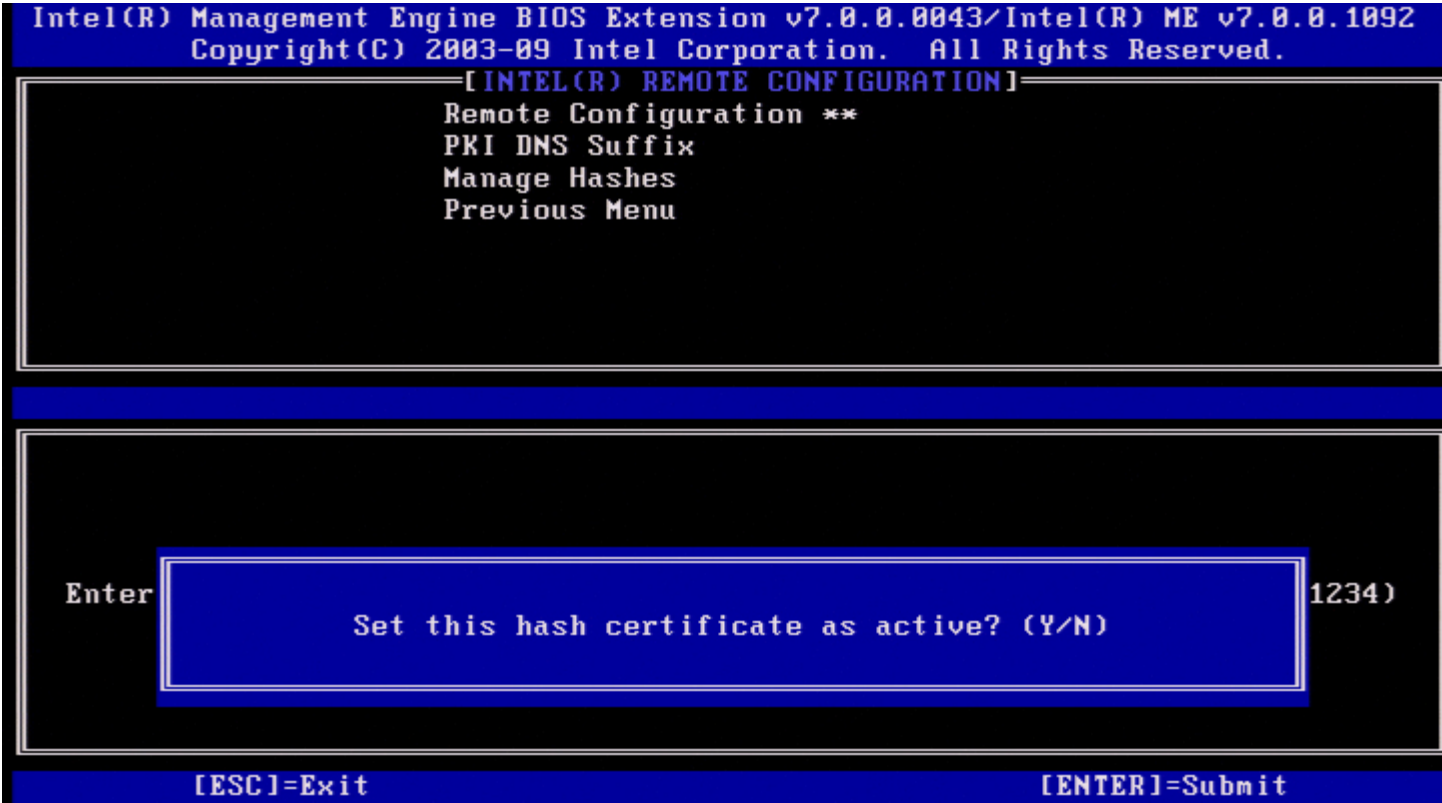
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.

[INTEL(R) REMOTE CONFIGURATION]

Remote Configuration **
PKI DNS Suffix
Manage Hashes
Previous Menu

Enter Certificate (e.g. ABCD-1234-ABCD-1234-ABCD-1234-ABCD-1234-ABCD-1234)

[ESC]=Exit [ENTER]=Submit

The Certificate hash value is a hexadecimal number (for SHA-1 it is 20 bytes for SHA-2 it is 32 bytes). If the value is not entered in the correct format, the message "Invalid Hash Certificate Entered - Try Again" is displayed. When you press <Enter>, you are prompted to set the active state of the hash.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation.  All Rights Reserved.
[INTEL(R) REMOTE CONFIGURATION]
Remote Configuration **
PKI DNS Suffix
Manage Hashes
Previous Menu

Enter                                                              1234)
Set this hash certificate as active? (Y/N)

[ESC]=Exit                                   [ENTER]=Submit
```

Your response sets the active state of the customized hash as follows:

- **Yes** – The customized hash will be marked as active.
- **No (Default)** – The customized hash will add to the EPS but will not be active.

Deleting a Hash

When the **Delete** is pressed in the Manage Certificate Hash screen, the following screen is displayed.

NOTE: A certificate hash that is set to Default cannot be deleted.

This option allows deleting of the selected certificate hash.

- **Yes** – Intel MEBx sends the firmware a message to delete the selected hash.
- **No** – Intel MEBx does not delete the selected hash, and returns to Remote Configuration.

Changing the Active State

When the **+** is pressed in the Manage Certificate Hashes screen, the following screen is displayed as seen in the following screen.

Answering **Y** toggles the active state of the currently selected certificate hash. Setting a hash as active indicates that the hash is available for use during PSK provisioning.

Viewing a Certificate Hash

When <Enter> is pressed in the Manage Certificate Hash screen, the following screen is displayed.

```
Intel(R) Management Engine BIOS Extension v7.0.0.0043/Intel(R) ME v7.0.0.1092
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[INTEL(R) REMOTE CONFIGURATION]
Remote Configuration **
PKI DNS Suffix
Manage Hashes
Previous Menu

Hash Name: PAE Lab Certificate
Hash Data: ABCD-1234-ABCD-1234-ABCD-1234-ABCD-1234-ABCD-1234
Default: [ ]
Active: [*]

Hash                                                                pe
GTE C
Balti
Cybertrust Global Root            [*]      [*]      SHA1
Verizon Global Root               [*]      [*]      SHA1
Entrast.net CA (2048)             [*]      [*]      SHA1
Entrast Root CA                   [*]      [*]      SHA1
VeriSign Universal Root CA        [*]      [*]      SHA1
PAE Lab Certificate               [*]      [ ]      SHA1

[ESC]=Exit   [INS]=Add   [DEL]=Del   [+]=Active   [ENTER]=View
```

The details of the selected certificate hash are displayed to the user and include the following:

- Hash Name
- Certificate Hash Data
- Active and Default States

Previous Menu

Under the Intel Remote Configuration menu select **Previous Menu** and press <Enter>.
The Intel Automated Setup and Configuration page appears.

Previous Menu

Under the Intel Automated Setup and Configuration menu select **Previous Menu** and press <Enter>.
The Intel AMT Configuration menu appears.

Previous Menu

Under the Intel AMT Configuration menu select **Previous Menu** and press <Enter>.
The Main Menu appears.

* Information on this page provided by Intel.

Intel Fast Call for Help

Intel Fast Call for help is available for VPro SKUs. An Intel Fast Call for help connection allows the end user to request assistance if the VPro system is outside the corporate network.

 NOTE: It is recommended that to press <F12> and select Fast Call for Help. It will only be available when the IT administrator has configured the system to support it.

Requirements

Before an Intel Fast Call connection can be established from the Operating System the VPro system must have:

1. Environment detection enabled
2. Remote Connection policy
3. Management Presence Server (MPS)

Putting it all Together

To get the Intel Fast Call for help, system needs to be in provisioned stated. If the system supports Full VPro Intel Fast Call for help will be available for use. If the system only supports Intel Standard Manageability Intel Fast call for help is not enabled.

1. Before an Intel Fast Call for help can be started, environment detection must be enabled. This allows Intel AMT to determine if the system is within the corporate network. This is configured through an ISV app.
2. A remote connection policy must be created before an Intel Fast call for help can be initiated. The policy for the BIOS initiated call does not need to be configured, but another policy must exist before initiating a help call from the BIOS. The BIOS must support the hot key that initiates the Intel Fast call for help.
3. A management presence server must exist to answer the Intel fast calls for help. The management presence server resides in the DMZ zone.

When all of these conditions are satisfied the system is able to initiate an Intel Fast Call for help.

Initiating Intel Fast Call for Help

Once the feature has been fully configured, there are three methods for initiating an Intel Fast Call for help session. These include:

- At the Dell splash screen press <Ctrl><h>.
- At the Dell splash screen press <F12> for the One Time Boot Menu.
  - Select the last option titled **Intel Fast Call for Help**.
- From Windows:
  1. Launch the Intel AMT privacy icon/application **Intel Management Security Status**.
  2. Switch to the **Intel AMT** tab.
  3. In the **Remote Connectivity** box, click **Connect**.

ME General Settings

The table below lists the default settings for the Intel Management Engine BIOS Extension (MEBx) on general settings page.

Password

Password	admin

Change Intel ME Password

Change Intel ME Password	blank

SET PRTC

Set PRTC	blank

Power Control

Power Control	
Intel ME ON in Host Sleep	Mobile: ON is S0 Mobile: ON is S0, ME Wake in S3, S4-5 (AC only) *
Idle Time Out	1

*Default setting
**May cause Intel AMT partial unprovision
[1] Intel ME Platform State Control is only changed for Management Engine (ME) troubleshooting.
[2] Un-provision setting only seen if the box is provisioned.

AMT Configuration

The table below lists the default settings for the Intel Management Engine BIOS Extension (MEBx) on AMT configuration page.

Manageability / Feature Selection

SOL / IDER	
Username and Password	Disabled Enabled *
SOL	Disabled Enabled *
IDER	Disabled Enabled *
Legacy Redirection Mode	Disabled Enabled *
KVM	Disabled Enabled *
User Consent	
User Opt-in	None KVM * All
Opt-in Configurable from remote IT	Disable Remote Control of KVM Opt-In Policy Enable Remote Control of KVM Opt-In Policy *

 NOTE: In order for KVM to work, the requirement must be an Intel i3/i5/i7/Celeron/Pentium CPU.

Password Policy

Password Policy	Default Password Only * During Setup and Configuration Anytime

Network Setup

Network Name Settings	
Host Name	blank
Domain Name	blank
Shared / Dedicated FQDN	Dedicated Shared *
Dynamic DNS Update	Disabled * Enabled
TCP / IP Settings	
Wired LAN IPv4 Configuration	
DHCP Mode	Disabled Enabled * *Below configuration page will only available if enabled selected*

IPv4 Address	0.0.0.0
Subnet Mask Address	0.0.0.0
Default Gateway Address	0.0.0.0
Preferred DNS Address	0.0.0.0
Alternate DNS Address	0.0.0.0
Wired LAN IPv6 Configuration	
IPv6 Feature Selection	Disabled * Enabled *Below configuration page will only available if enabled selected*
IPv6 Interface ID Type	Random ID * Intel ID Manual ID
IPv6 Address	blank
IPv6 Default Router	blank
Preferred DNS IPv6 Address	blank
Alternate DNS IPv6 Address	blank

Activate Network Access	Y / N

Unconfigure Network Access	Y / N

Remote Setup and Configuration

Current Provisioning Mode	
Provisioning Record	
RCFG	
Start Configuration	Y / N
Provisioning Server IPv4/IPv6	blank
Provisioning Server FQDN	blank
TLS PSK	
Set PID and PPS	blank
Delete PID and PPS	Y / N
TLS PKI	
Remote Configuration	Disabled Enabled *
PKI DNS Suffix	blank
Manage Hashes	

*Default setting
**May cause Intel AMT partial unprovision
[1] Intel ME Platform State Control is only changed for Management Engine (ME) troubleshooting.
[2] In Enterprise mode, DHCP automatically loads the domain name.
[3] Un-provision setting only seen if the box is provisioned.

Methods Overview

As discussed in the **Setup and Configuration Overview** section, the computer has to be configured before the Intel AMT capabilities are ready to interact with management application. There are three methods to complete the provisioning process (from least complex to most complex):

- **Configuration service** — A configuration service allows you to complete the provisioning process from a GUI console on their server with only one touch on each of the Intel AMT capable computers. The PPS and PID fields are completed using a file created by the configuration service saved to a USB mass storage device.
- **MEBx interface** — The IT administrator manually configures the Management Engine BIOS Extension (MEBx) settings on each Intel AMT ready computer. The PPS and PID fields are completed by typing the 32 character and 8 character alpha-numeric keys created by the configuration service into the MEBx interface.
- **TLS-PKI**— Commonly referred to as Remote Configuration (RCFG) or Zero Touch Configuration (ZTC). This process utilizes a certificate associated with the ProvisionServer. The associated certificate hash must be listed within the Intel Management Engine BIOS Extension (MEBx).
  TLS-PKI refer as Transport Layer Security - Public Key Infrastructure

Details on using these various methods are available in the next section.

Using a USB Device

This section discusses Intel AMT setup and configuration using a USB storage device. You can set up and locally configure password, provisioning ID (PID), and provisioning passphrase (PPS) information with a USB drive key. This is also called USB provisioning. USB provisioning allows you to manually set up and configure computers without the problems associated with manually typing in entries.

 NOTE: USB provisioning only works if the MEBx password is set to the factory default of `admin`. If the password has been changed, reset it to the factory default by clearing the CMOS.

The following is a typical USB drive key setup and configuration procedure. For a detailed walk-through using Altiris Dell Client Manager (DCM), refer to the USB device procedure page.

1. Insert a USB drive key into the computer with a management console.
2. Request the local setup and configuration records from a setup and configuration server (SCS) through the console.
3. The SCS does the following:
    1. Generates the appropriate passwords, PID, and PPS sets.
    2. Stores this information in its database.
    3. Returns the information to the management console.
4. The management console writes the password, PID, and PPS sets to a **setup.bin** file in the USB drive key.
5. Take the USB drive key to the staging area where new Intel AMT capable computers are located. Perform the following:
    1. Unpack and connect the computers, if necessary.
    2. Insert the USB drive key into a computer.
    3. Turn on that computer.
6. The computer BIOS detects the USB drive key.
    - If found, the BIOS looks for a **setup.bin** file at the beginning of the drive key. Go to step 7.
    - If no USB drive key or **setup.bin** file is found, then restart the computer. Ignore the remaining steps.
7. The computer BIOS displays a message that automatic setup and configuration will occur.
    1. The first available record in the **setup.bin** file is read into memory. The process accomplishes the following:
        - Validates the file header record.
        - Locates the next available record.
        - If the procedure is successful, the current record is invalidated so it cannot be used again.
    2. The process places the memory address into the MEBx parameter block.
    3. The process calls MEBx.
8. MEBx processes the record.
9. MEBx writes a completion message to the display.
10. Turn off the computer. The computer is now in the setup state and is ready to be distributed to users in an Enterprise mode environment.
11. Repeat step 5 if you have more than one computer.

Refer to the management console supplier for more information on USB drive key setup and configuration.

USB Drive Key Requirements

The USB drive key must meet the following requirements to be able to set up and configure Intel AMT:

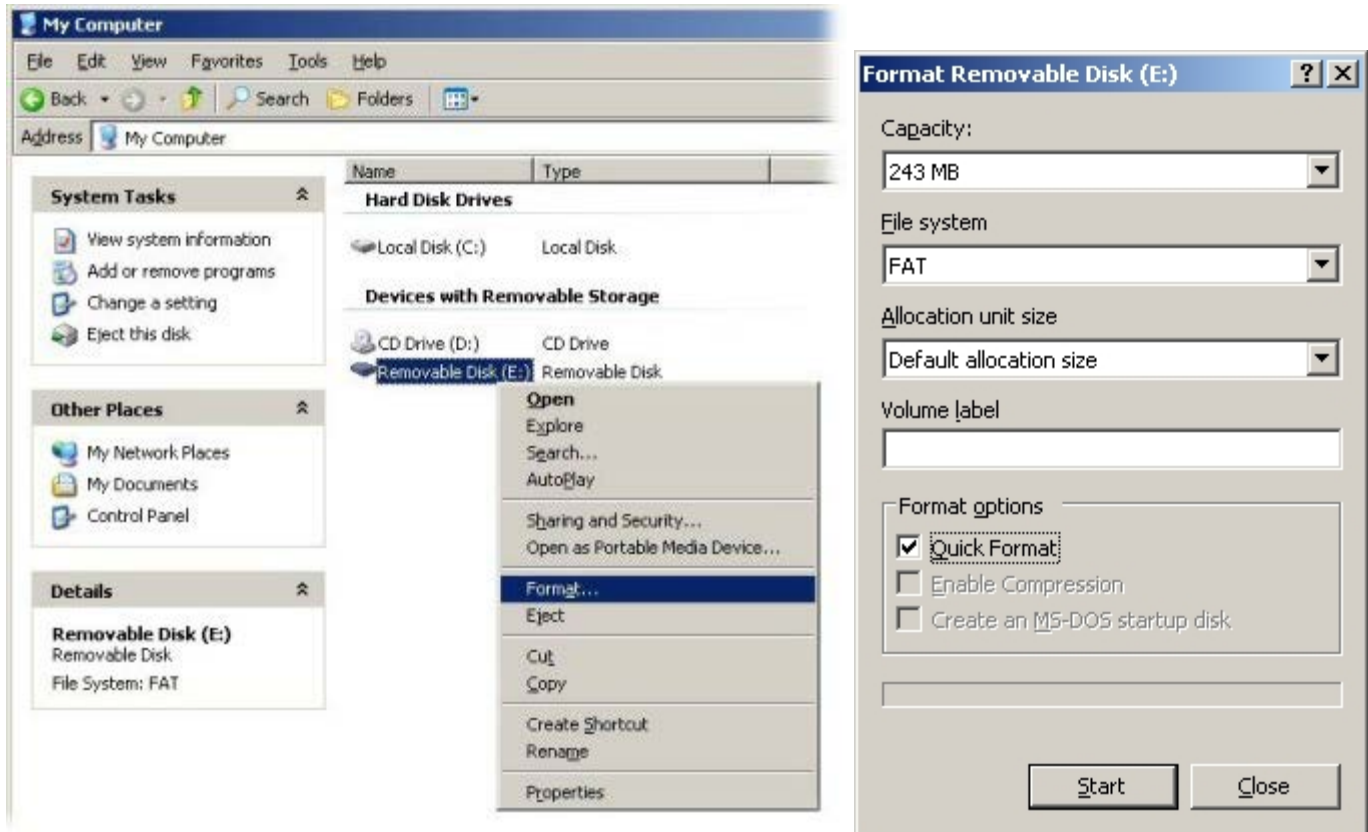
- It must be greater than 16 MB.
- It must be formatted with the FAT16 or FAT32 file system.
- The sector size must be 1 KB.
- The USB drive key is not bootable.
- The USB drive key AMT provisioning and not for any other purpose.
- The USB key must not contain any other files whether hidden, deleted, or otherwise.
- The **setup.bin** file must be the first file landed on the USB drive key (**for Legacy BIOS or Wembley**)
- The **setup.bin** file must be in the top directory (**for UEFI BIOS or RAM**)

USB Device Procedure

Dell Client Management (DCM) application is the default console package provided. This section provides the procedure to set up and configure Intel AMT with the DCM package. As mentioned earlier in the document, several other packages are available through third-party vendors.

The computer must be configured and seen by the DNS server before you begin this process. A USB storage device is also required and must conform to the requirements listed on Using a USB Device page.

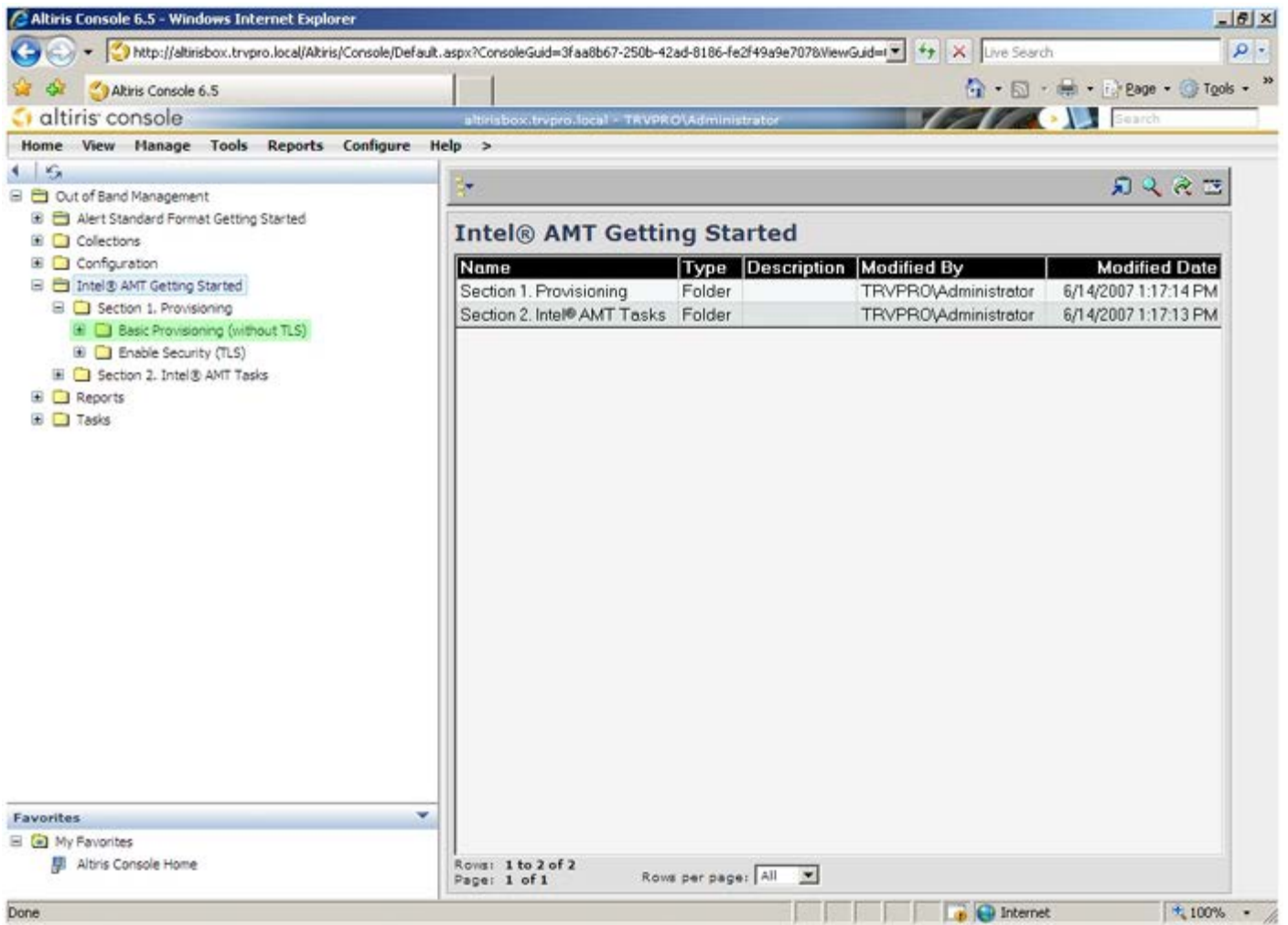
NOTE: The nature of management software is that it is not always dynamic or real time. You may have to repeat an action multiple times to cause a result.

1. Format a USB device with the FAT16 file system and no volume label and then set it aside.

2. Open the **Altiris Dell Client Manager** application by double-clicking the desktop icon or through the Start menu.

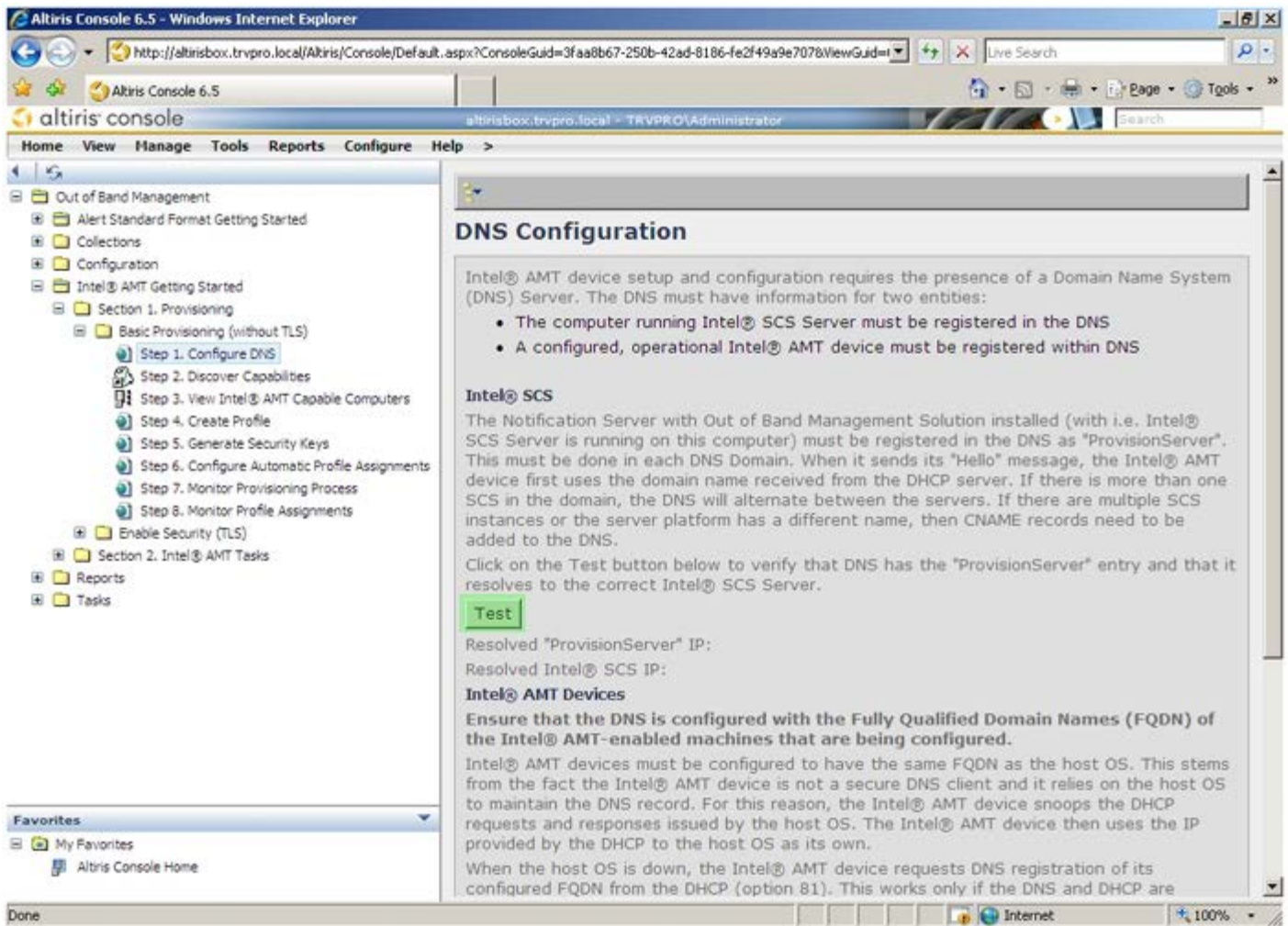
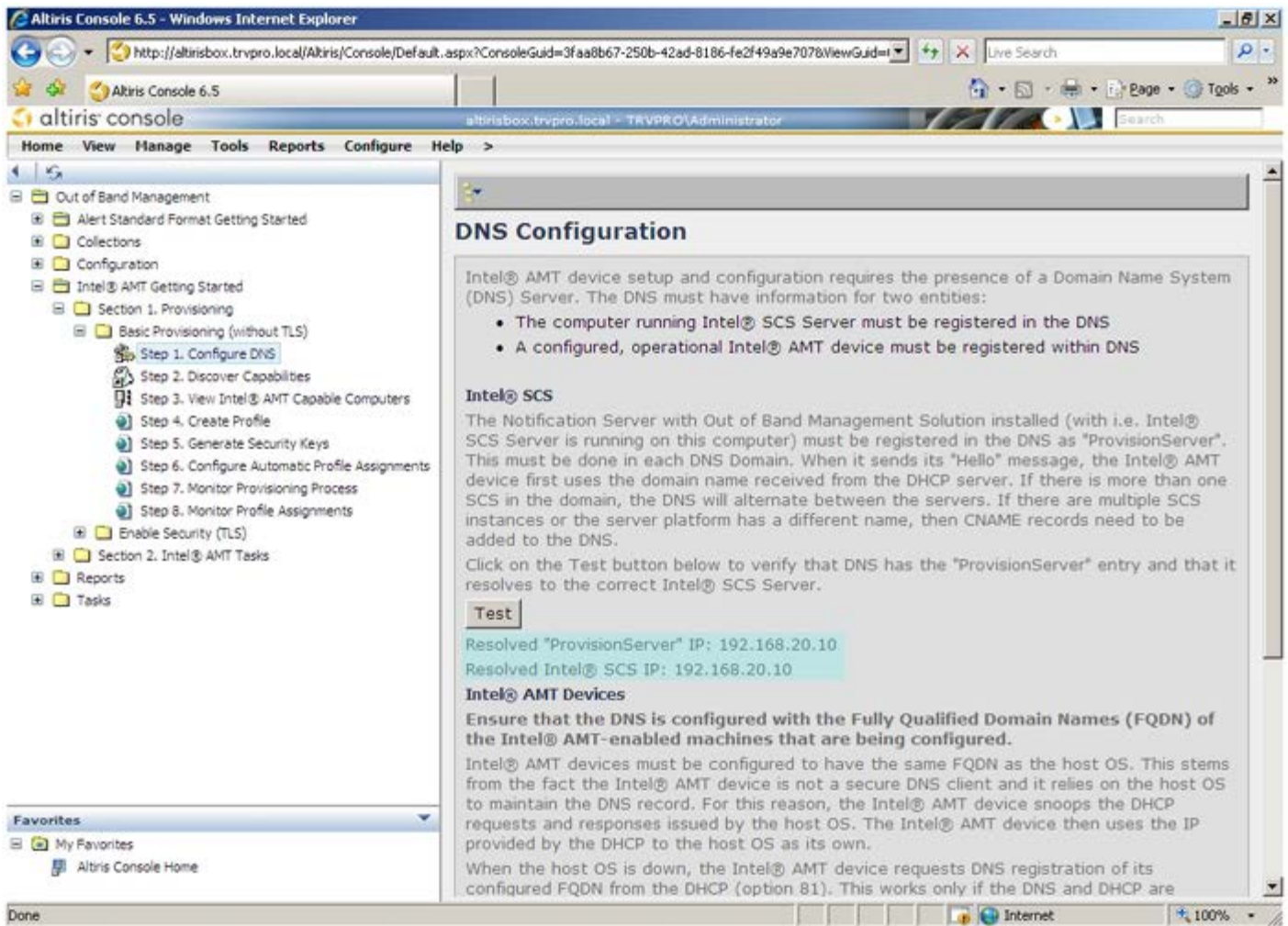
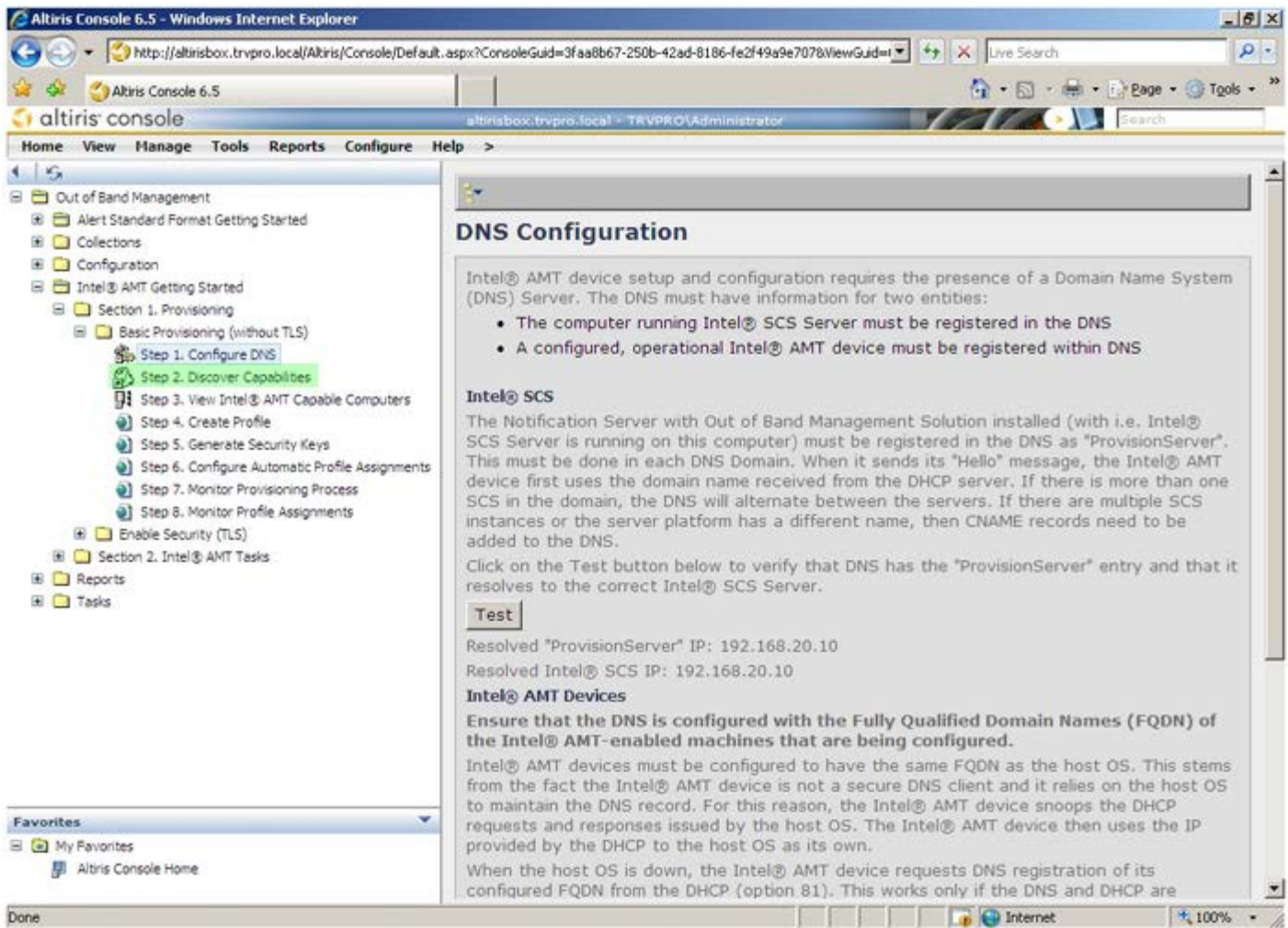
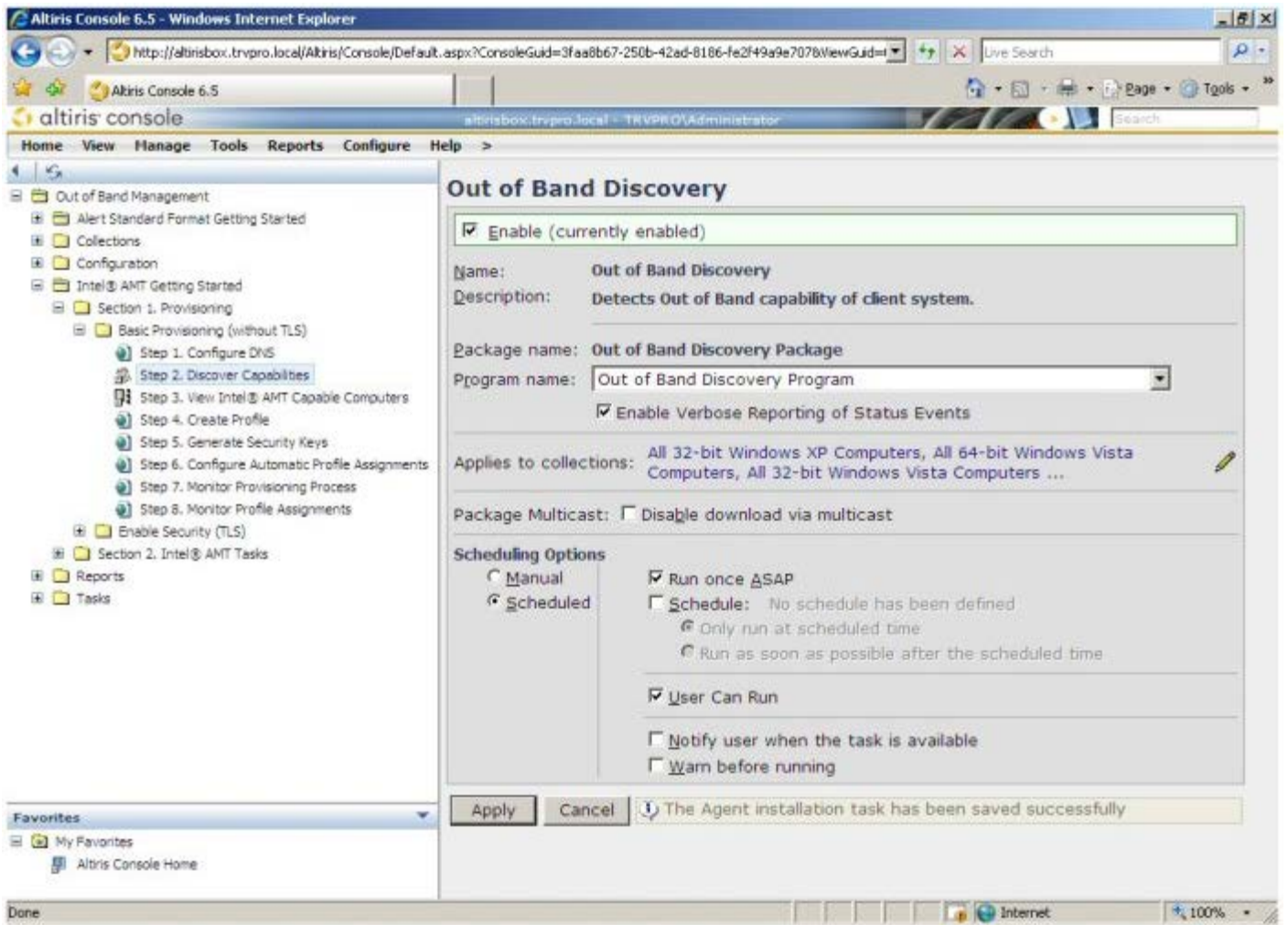
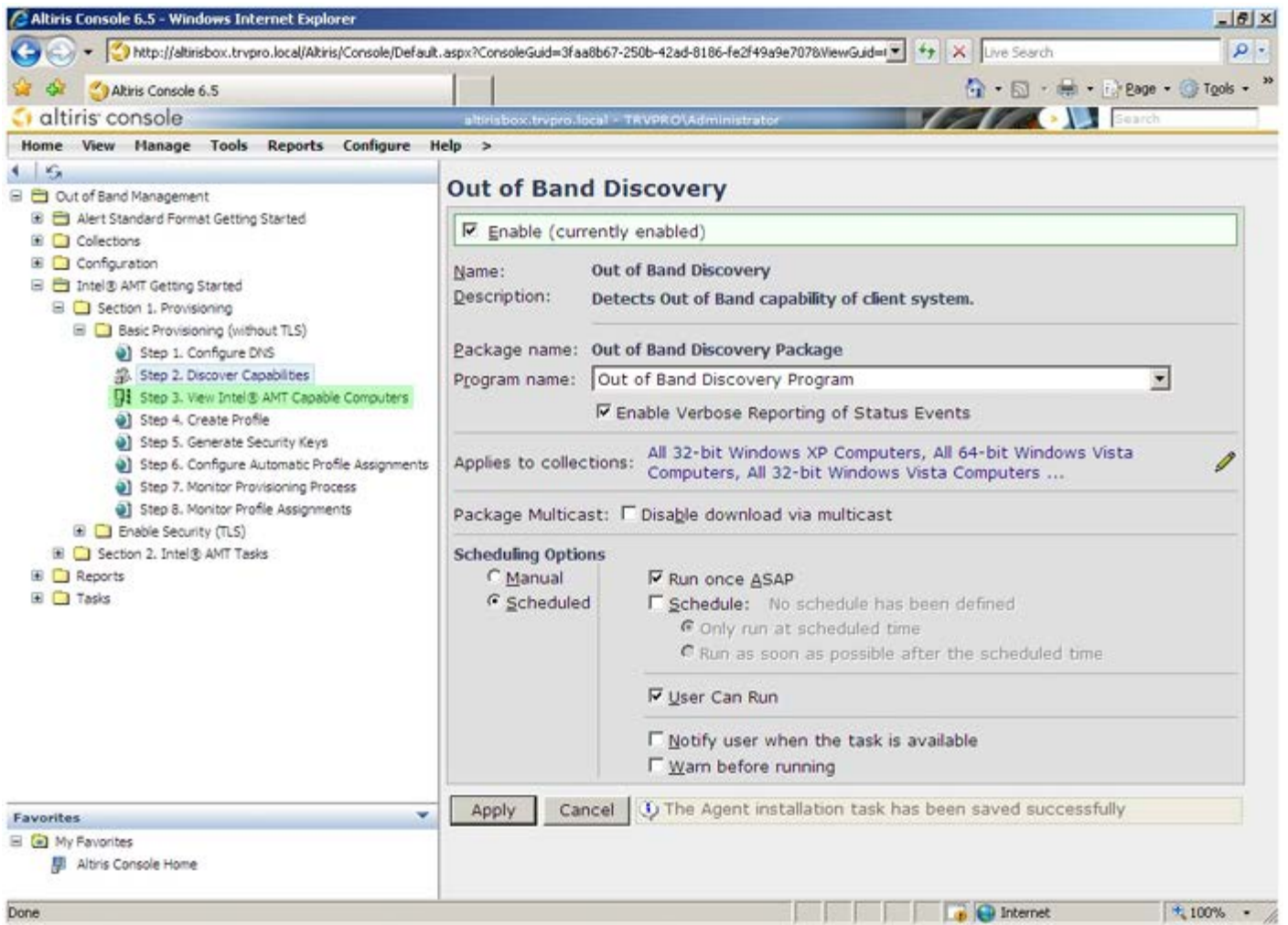
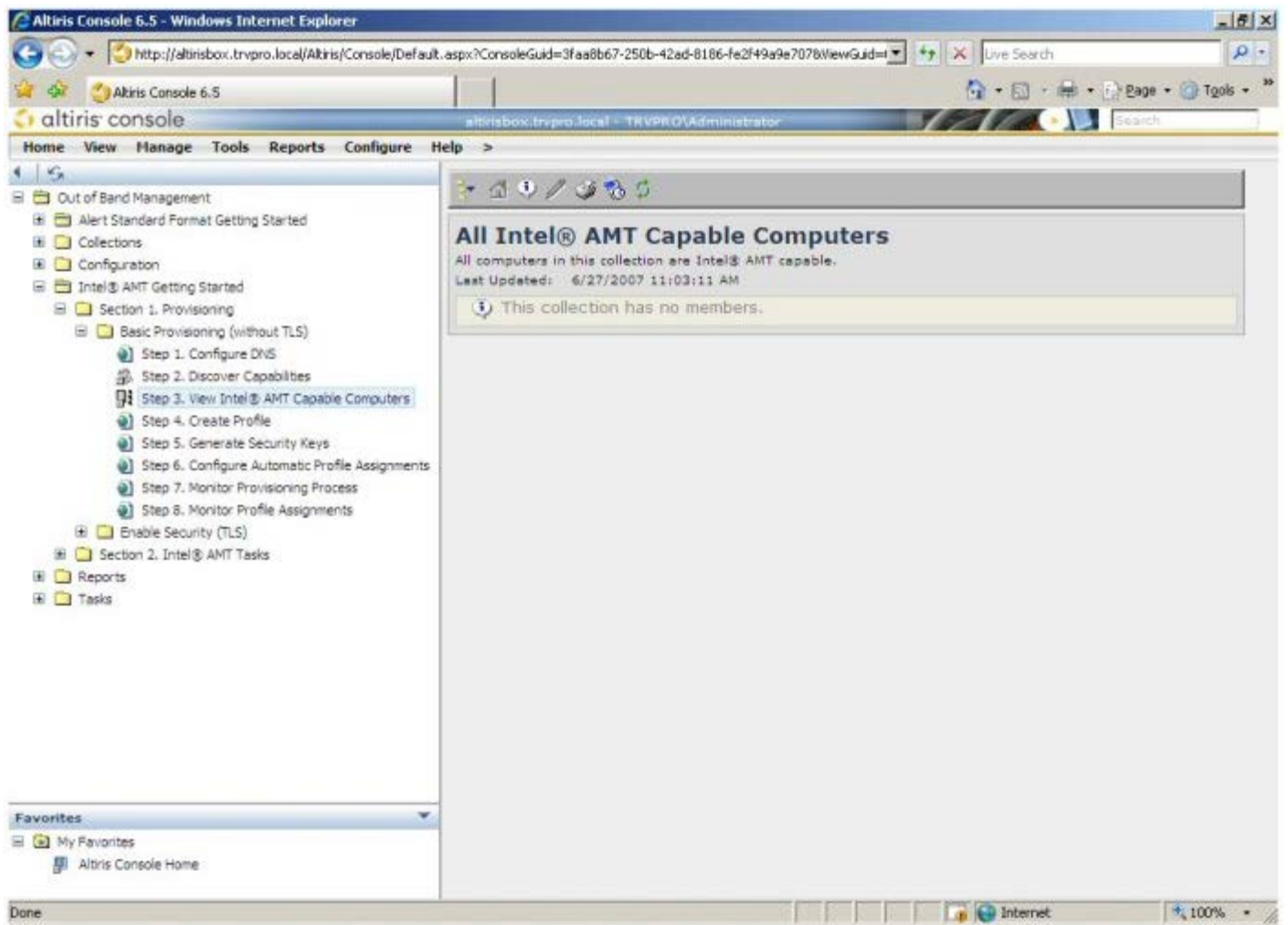
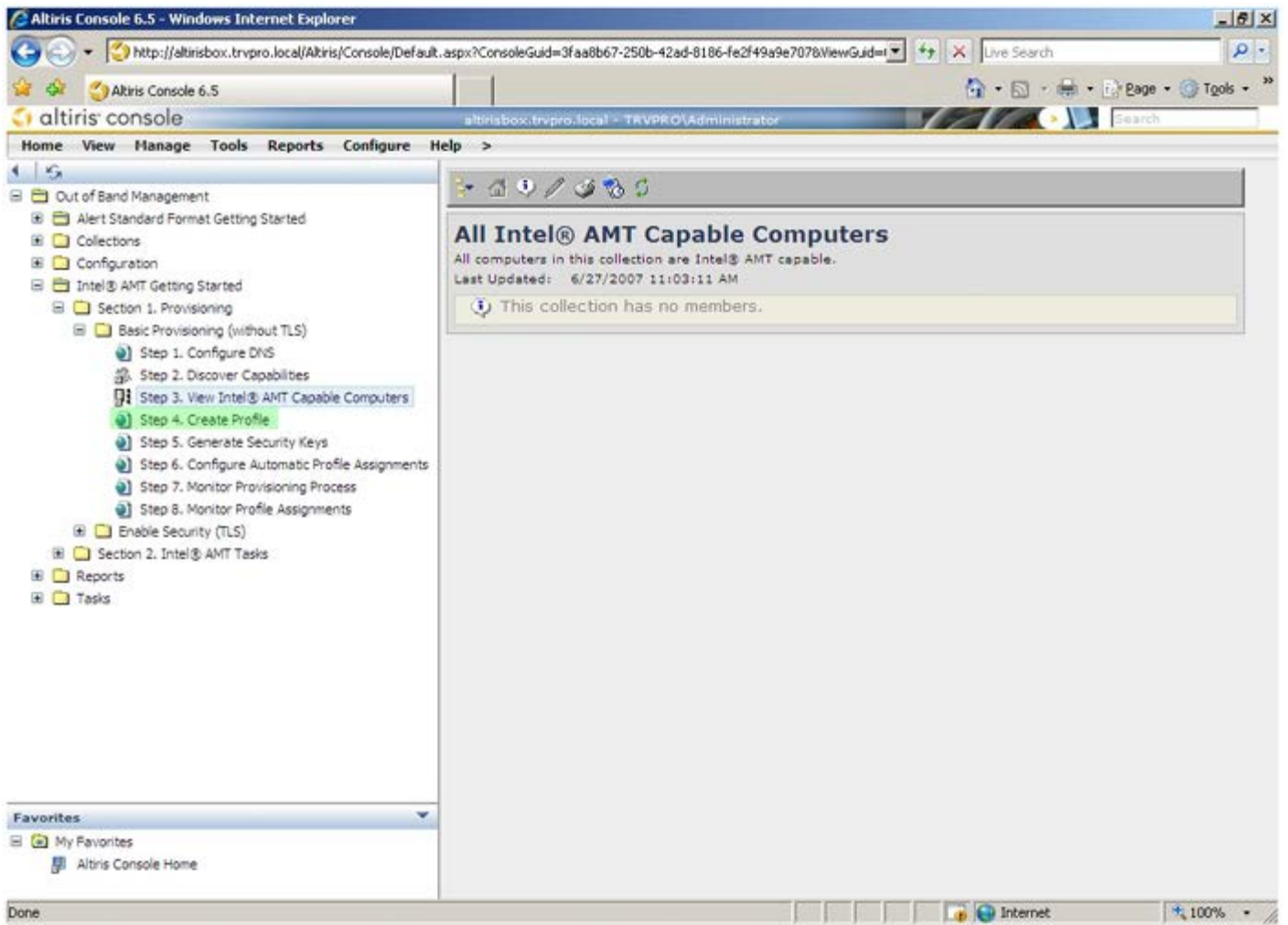
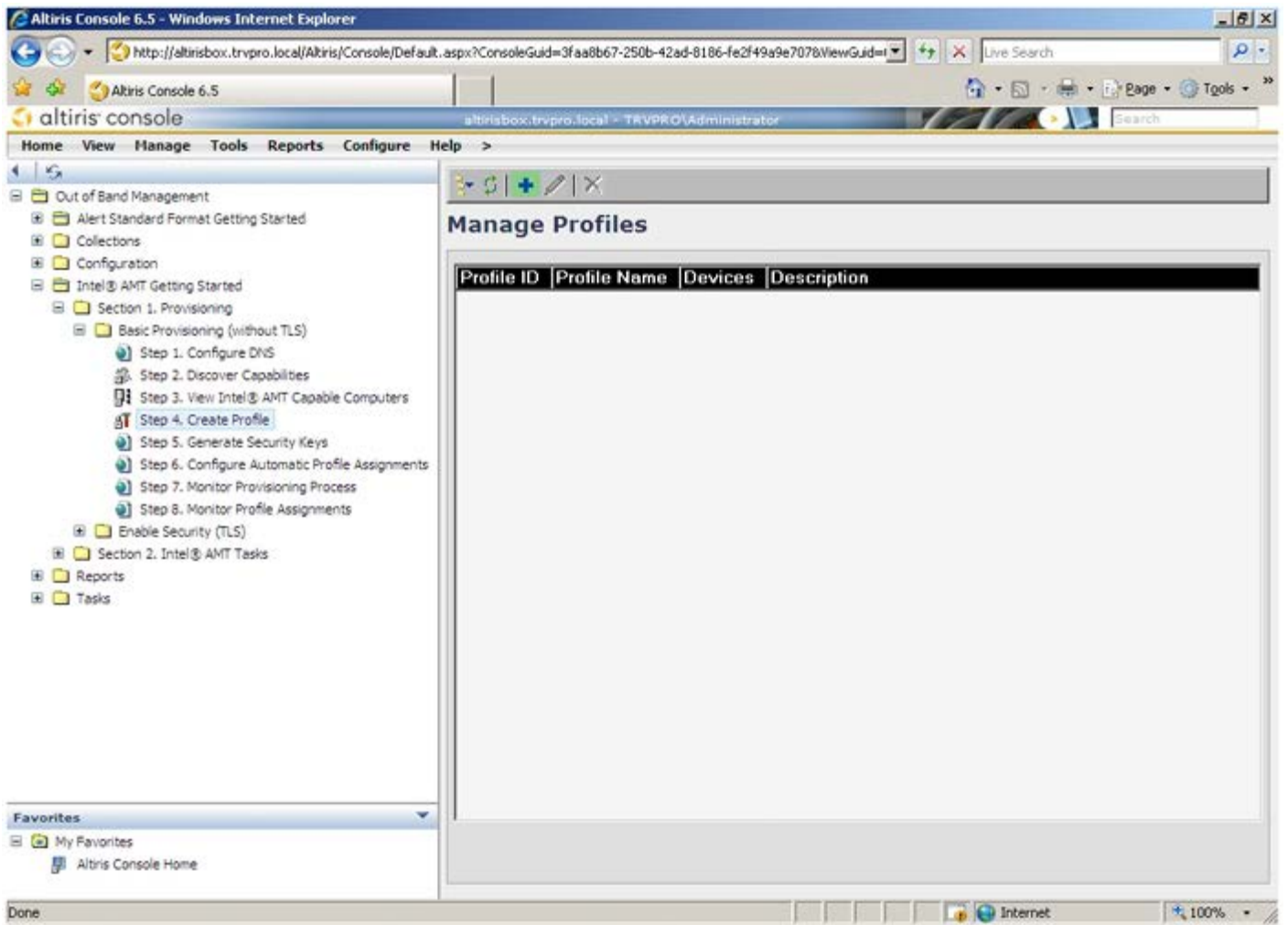
3. Select **AMT Quick Start** from the left navigation menu to open the **Altiris Console**.

4. Click the <+> to expand the **Intel AMT Getting Started** section.

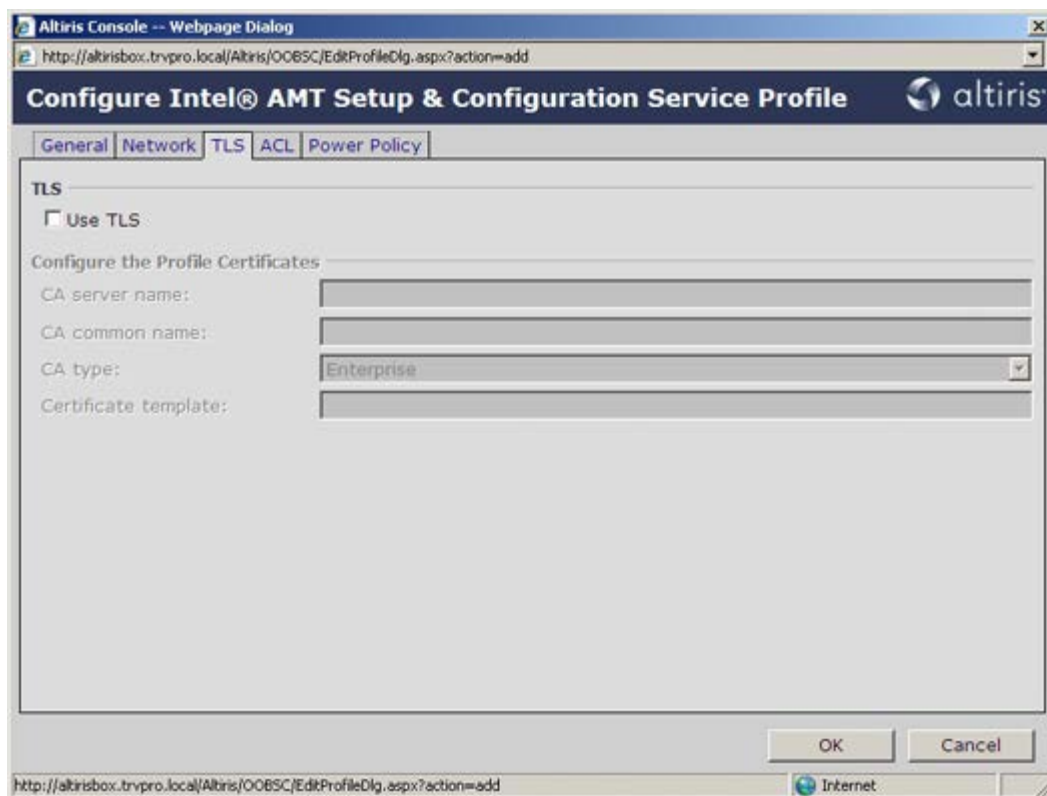
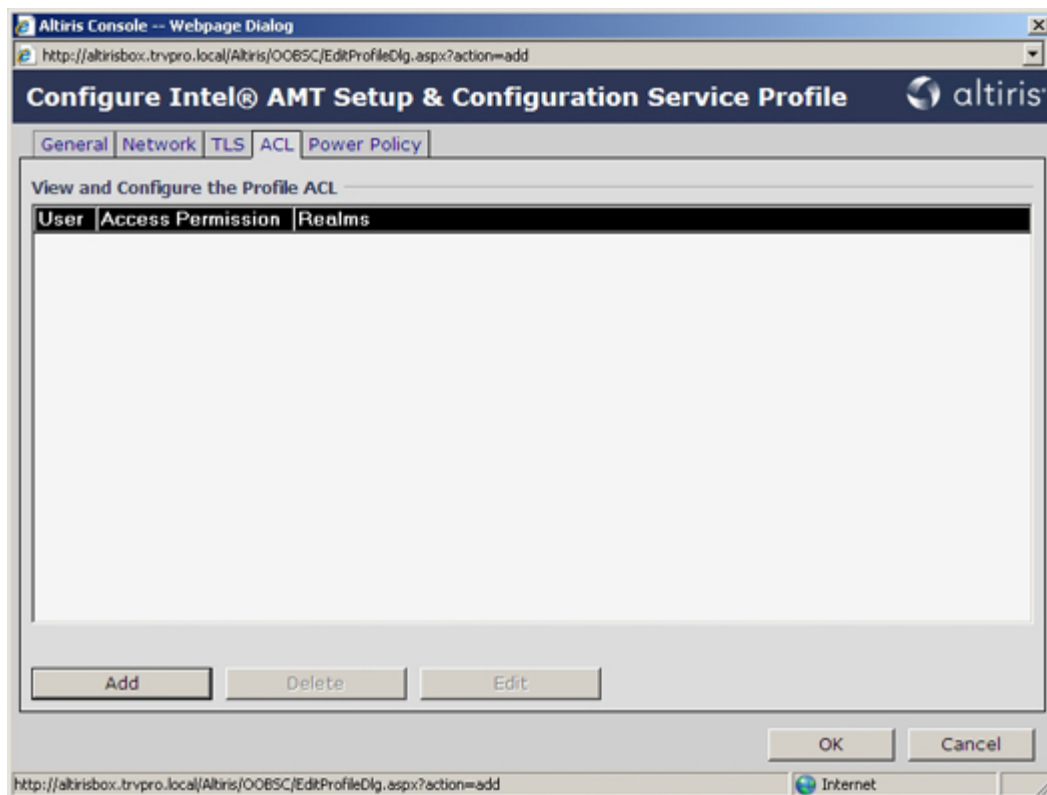
5. Click the <+> to expand the **Section 1. Provisioning** section.

6. Click the <+> to expand the **Basic Provisioning (without TLS)** section.

7. Select **Step 1. Configure DNS**.

8. The notification server with an out-of-band management solution installed must be registered in DNS as "ProvisionServer."

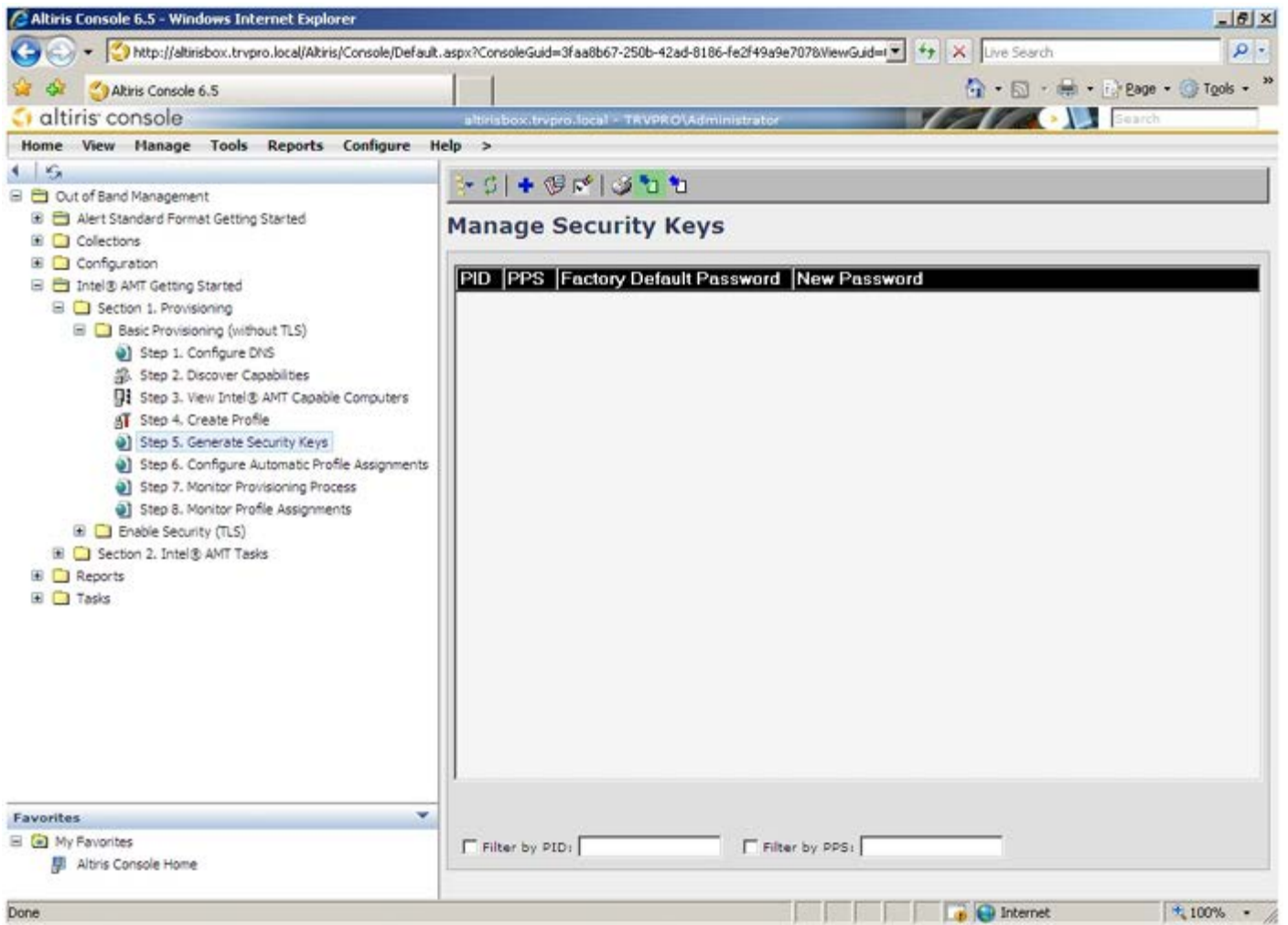
9. Click **Test** on the **DNS Configuration** screen to verify that DNS has the ProvisionServer entry and that it resolves to the correct Intel Setup and Configuration Server (SCS).

10. The IP address for the ProvisionServer and Intel SCS are now visible.

11. Select **Step 2. Discovery Capabilities**.

12. Verify that the setting is **Enabled**. If **Disabled**, select the check box next to **Disabled** and click **Apply**.

13. Select **Step 3. View Intel AMT Capable Computers**.

14. Any Intel AMT capable computers on the network are visible in this list.

15. Select **Step 4. Create Profile**.

16. Click the plus symbol to add a new profile.

17. On the **General** tab the administrator can modify the profile name and description along with the password. The administrator sets a standard password for easy maintenance in the future. Select the **manual** radio button and type a new password.

18. The **Network** tab provides the option to enable ping responses, VLAN, WebUI, Serial over LAN, and IDE Redirection. If you are configuring Intel AMT manually, all these settings are also available in the MEBx.

19. The **TLS** (Transport Layer Security) tab provides the ability to enable TLS. If enabled, several other pieces of information are required including the certificate authority (CA) server name, CA common name, CA type, and certificate template.

20. The **ACL** (access control list) tab is used to review users already associated with this profile and to add new users and define their access privileges.

21. The **Power Policy** tab has configuration options to select the sleep states for Intel AMT as well as an **Idle Timeout** setting. It is recommended that Idle timeout is always set to 0 for optimal performance.

NOTE: The setting for the **Power Policy** tab can potentially impact a computer's ability to remain E-Star 4.0 compliant.

22. Select **Step 5. Generate Security Keys**.

23. Select the icon with the arrow pointing out to **Export Security Keys to USB Key**.

24. Select the **Generate keys before export** radio button.

25. Type the number of keys to generate (depends on the number of computers that need to be provisioned). The default is 50.

26. The Intel ME default password is **admin**. Configure the new Intel ME password for the environment.

27. Click **Generate**. Once the keys have been created, a link appears to the left of the **Generate** button.

28. Insert the previously formatted USB device into a USB connector on the ProvisioningServer.

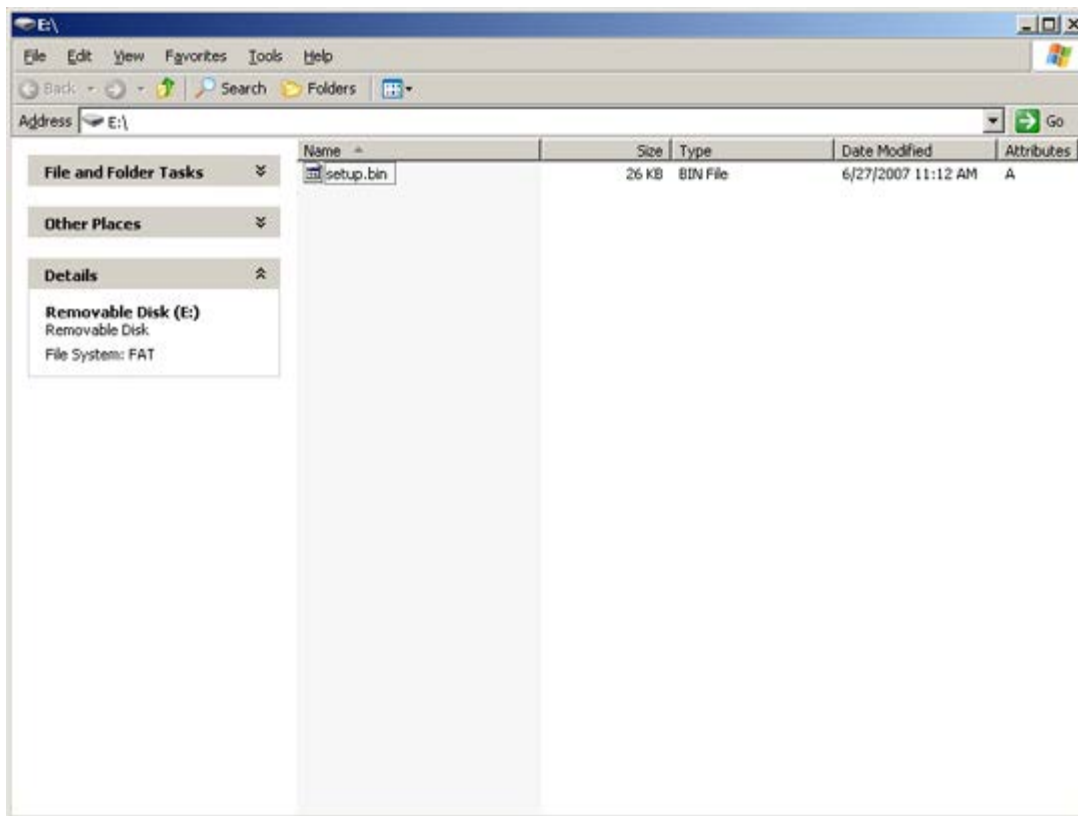
29. Click the **Download USB key file** link to download **setup.bin** file to the USB device. The USB device is recognized by default; save the file to the USB device.

NOTE: If additional keys are needed in the future, the USB device must be reformatted before saving the **setup.bin** file to it.

a. Click **Save** on the **File Download** dialog box.

b. Verify that the **Save in:** location is directed to the USB device. Click **Save**.

c. Click **Close** in the **Download complete** dialog box.

30. The **setup.bin** file is now visible in the drive explorer window.

31. Close the **Export Security Keys to USB Key** and drive explorer windows to return to the Altiris Console.
32. Insert the USB device and turn on the computer. The USB device is recognized immediately and you are prompted to `Continue with Auto Provisioning (Y/N)`

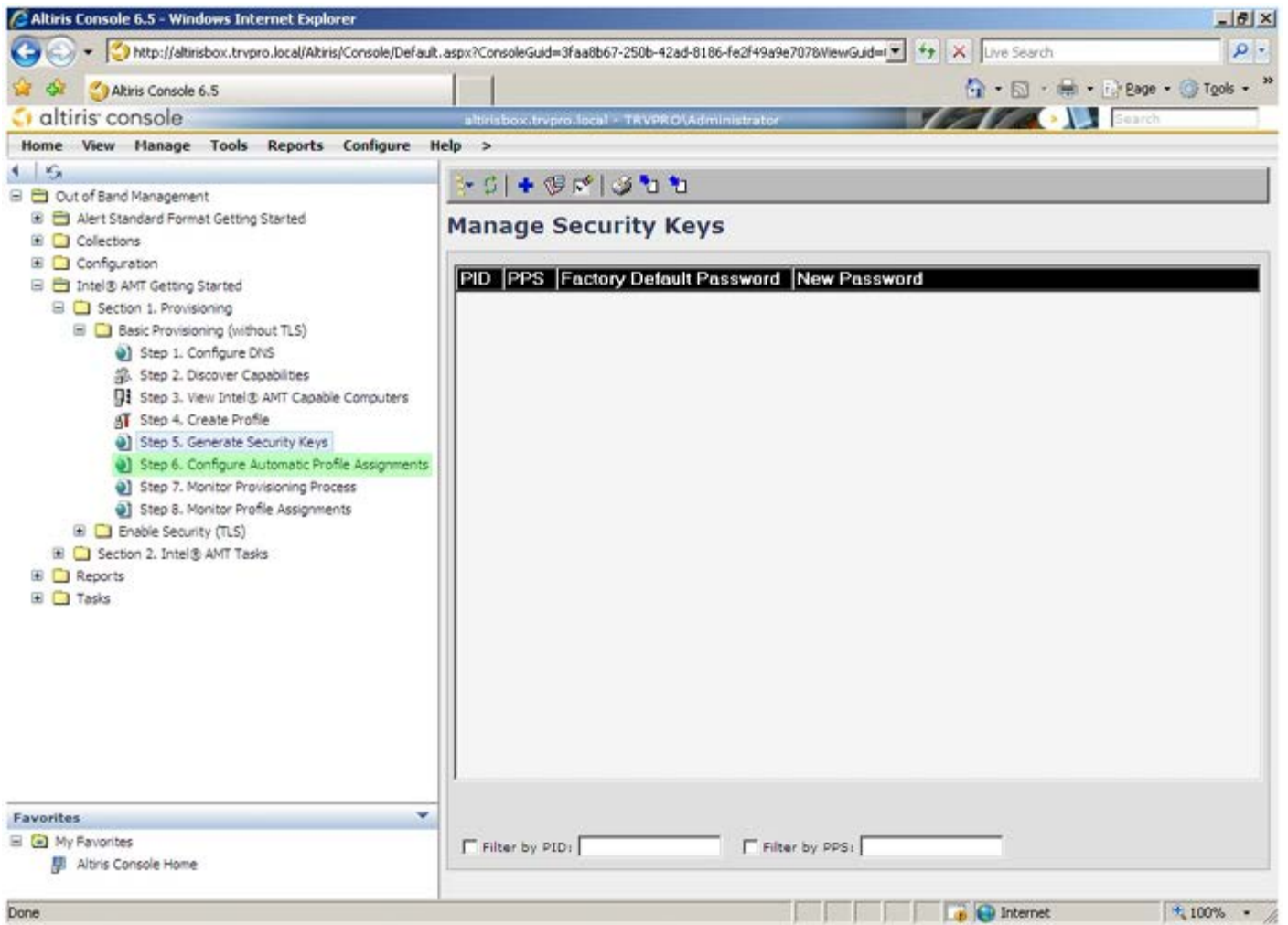
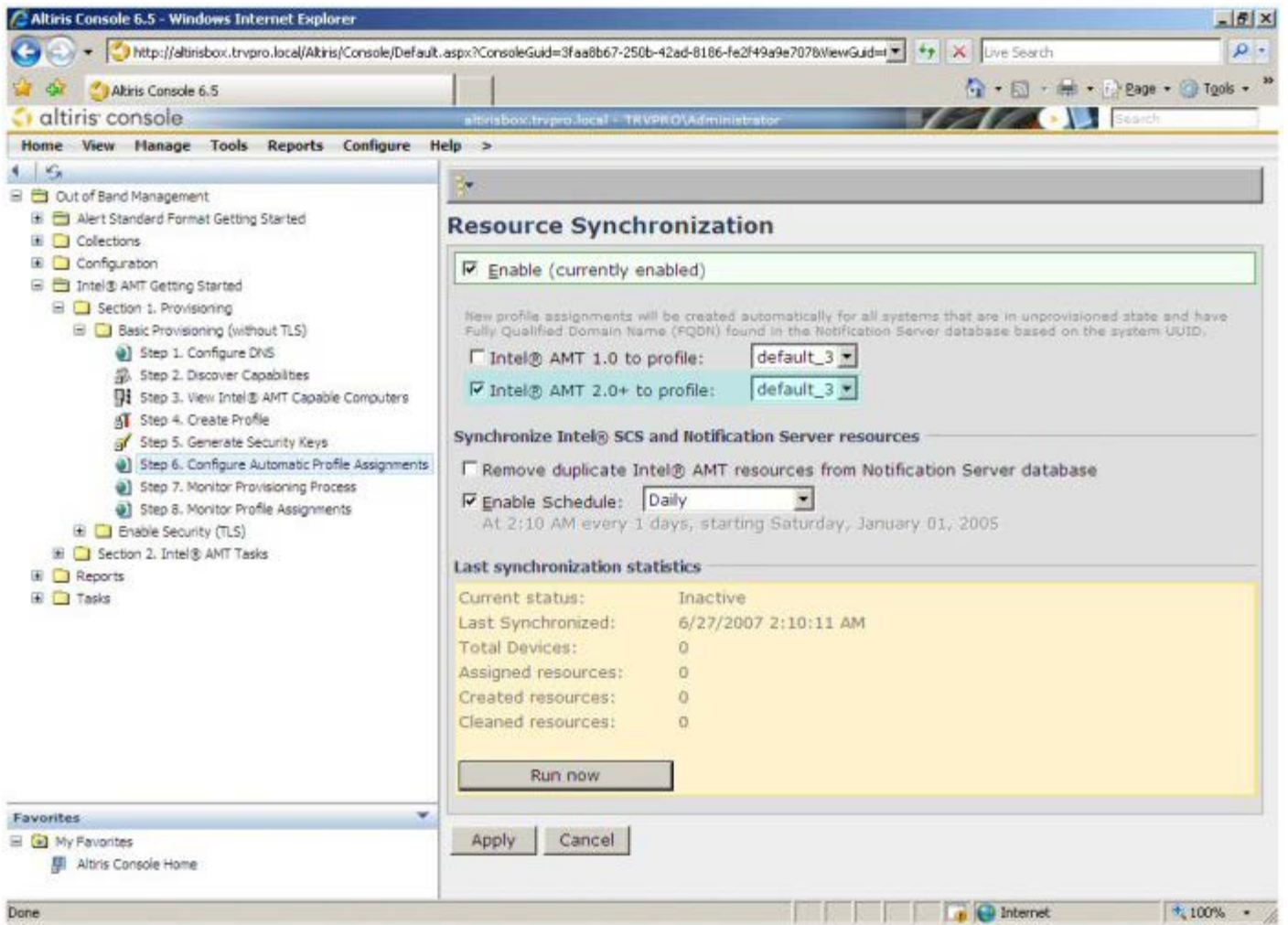
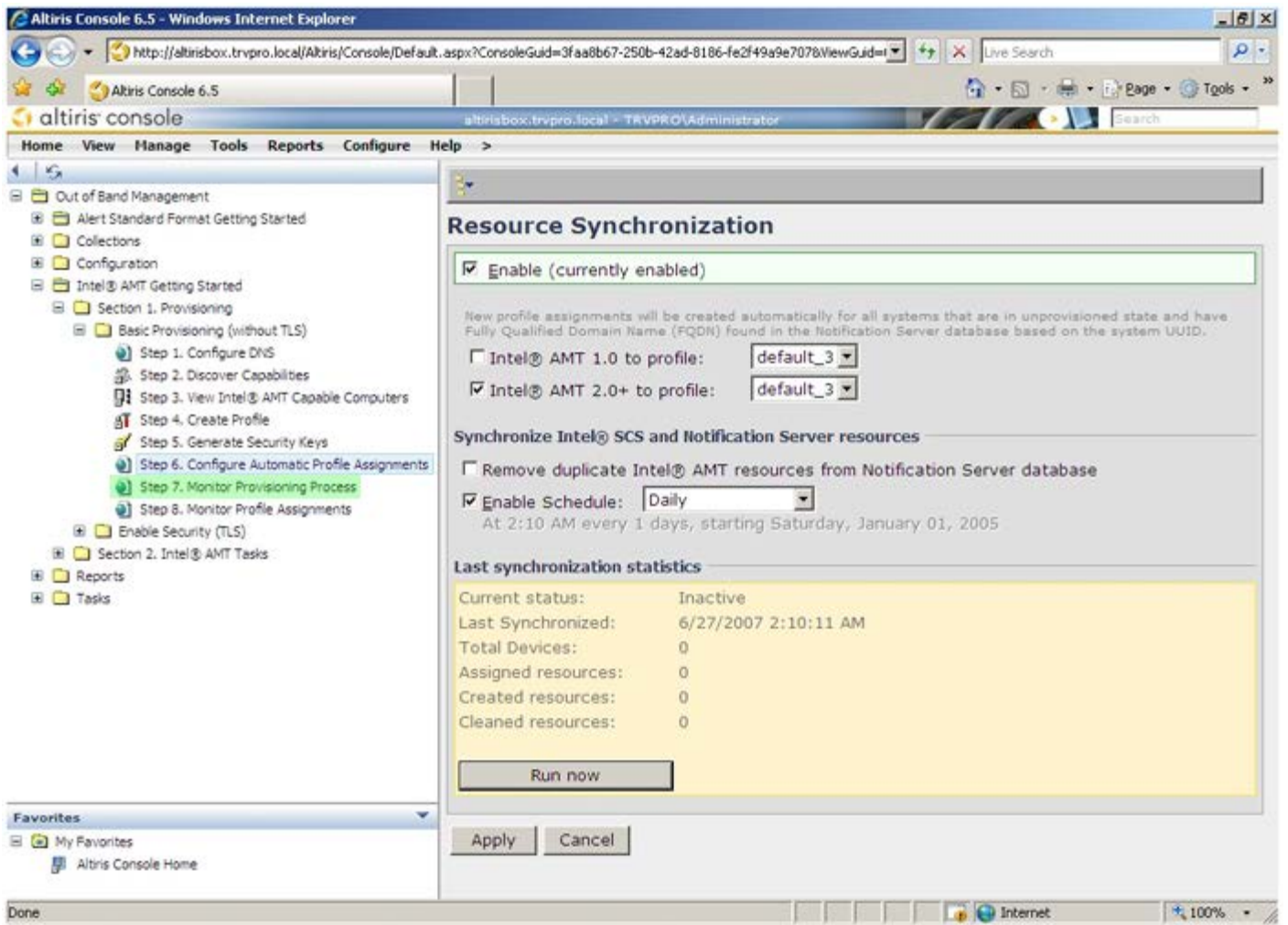
33. Press <**Y**>.

`Press any key to continue with system boot...`

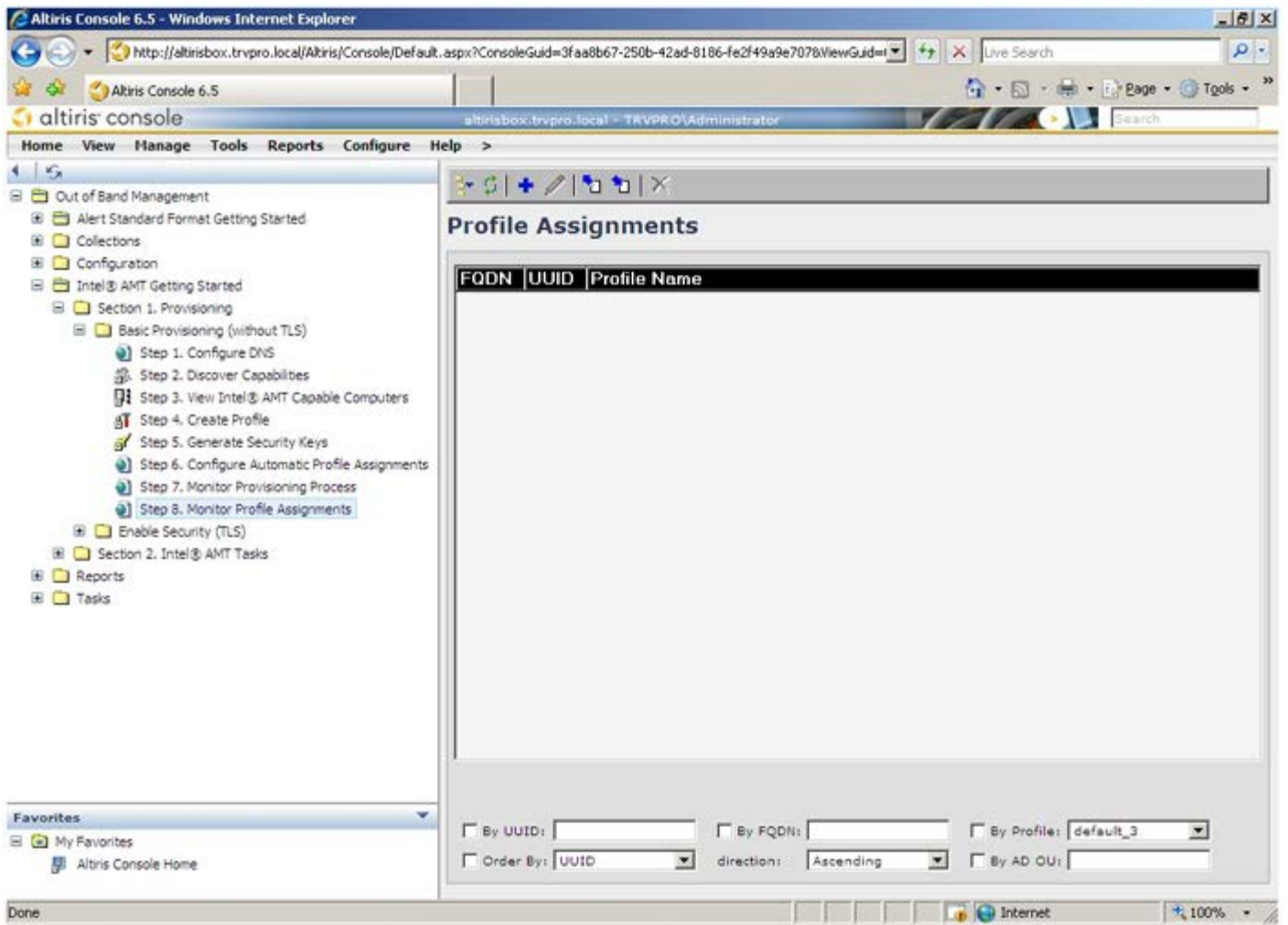
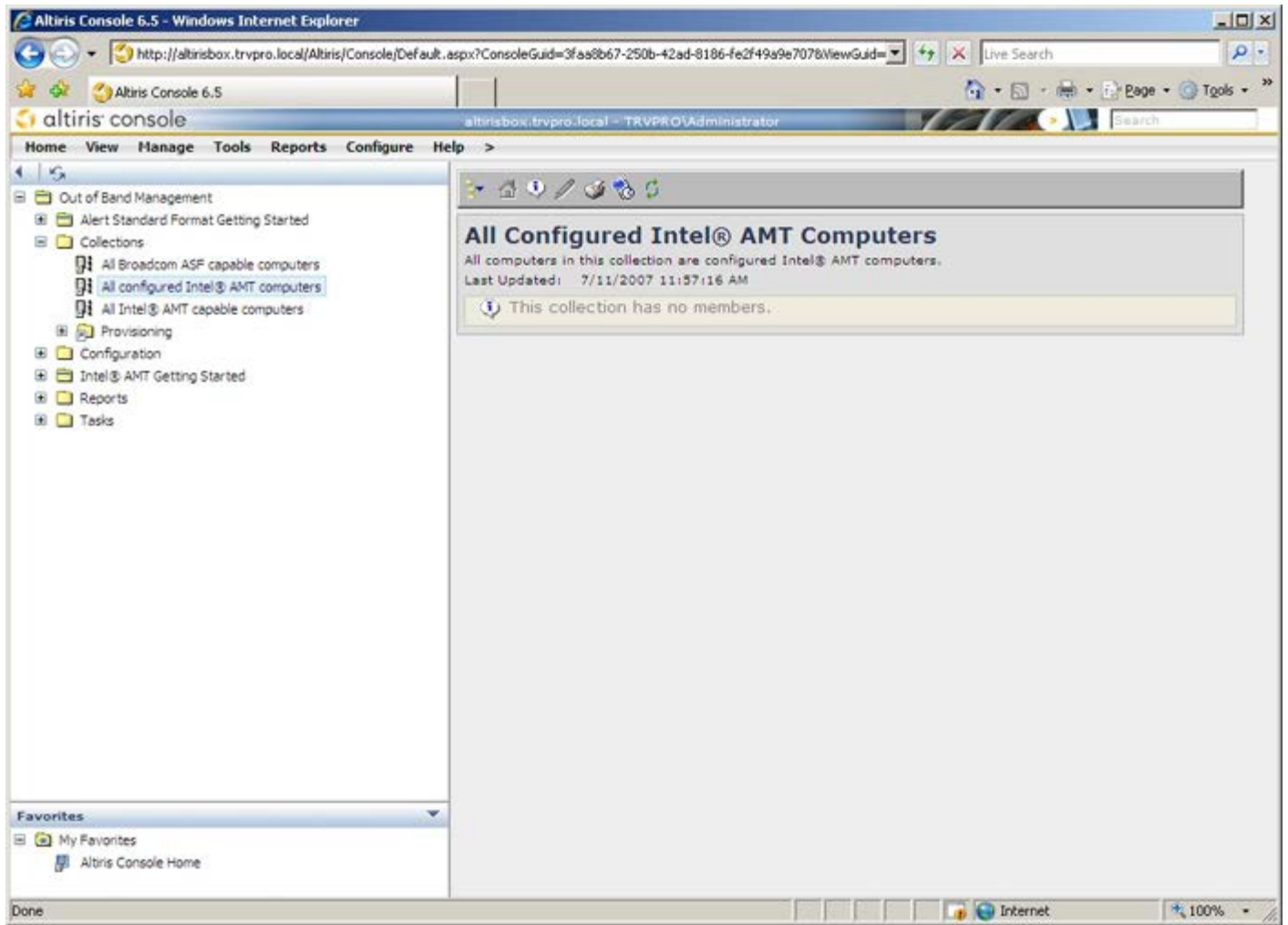
```
Intel(R) Management Engine BIOS Extension
Copyright(C) 2003-07 Intel Corporation.  All Rights Reserved.

Found USB Key for provisioning Intel(R) AMT
Continue with Auto Provisioning (Y/N)


Intel(R) AMT Provisioning complete
Press any key to continue with system boot...
```

```
Intel(R) Management Engine BIOS Extension
Copyright(C) 2003-07 Intel Corporation.  All Rights Reserved.

Found USB Key for provisioning Intel(R) AMT
Continue with Auto Provisioning (Y/N)


Intel(R) AMT Provisioning complete
Press any key to continue with system boot...
ME-BIOS Sync - Successful
```

34. Once complete, turn off the computer and move back to the management server.

35. Select **Step 6. Configure Automatic Profile Assignments**.

36. Verify that the setting is enabled. In the **Intel AMT 2.0+** dropdown, select the profile created previously. Configure the other settings for the environment.

37. Select **Step 7. Monitor Provisioning Process**.

38. The computers for which the keys were applied are updated in the system list. At first the status is **Unprovisioned**, then the system status changes to **In provisioning**, and finally it changes to **Provisioned** at the end of the process.

39. Select **Step 8. Monitor Profile Assignments**.

40. The computers for which profiles were assigned appear in the list. Each computer is identified by the **FQDN**, **UUID**, and **Profile Name** columns.

41. Once the computers are provisioned, they are visible under the **Collections** folder in **All configured Intel AMT computers**.

System Deployment

Once you are ready to deploy a computer to a user, plug the computer into a power source and connect it to the network. Use the integrated Intel 82566DM Network Interface Card (NIC). Intel Active Management Technology (Intel AMT) does not work with any other NIC solution.

When the computer is turned on, the computer immediately looks for a Setup and Configuration Server (SCS). If the computer finds this server, the Intel AMT capable computer sends a **Hello** message to the server.

 NOTE: User must first activate network access either via MEBx or using Intel Activator.

DHCP and DNS must be available for the setup and configuration server search to automatically succeed. If DHCP and DNS are not available, then the setup and configuration servers (SCS) IP address must be manually entered into the Intel AMT capable computer's MEBx.

The **Hello** message contains the following information:

- Provisioning ID (PID)
- Universally Unique Identifier (UUID)
- IP address
- ROM and firmware (FW) version numbers

The **Hello** message is transparent to the end user.

1. In the AMT 7, in the OS, select IMSS.
2. Under the **Advanced** tab, select **Extended System Details**.
3. Click **Intel ME Information**.

If Provisioning Mode states "In Provisioning", the hello packets are being sent to provision server in the network. The SCS uses the information in the **Hello** message to initiate a Transport Layer Security (TLS) connection to the Intel AMT capable computer using a TLS Pre-Shared key (PSK) cipher suite if TLS is supported.

The SCS uses the PID to look up the provisioning passphrase (PPS) in the provisioning server database and uses the PPS and PID to generate a TLS Pre-Master Secret. TLS is optional. For secure and encrypted transactions, use TLS if the infrastructure is available. If you do not use TLS, then HTTP Digest is used for mutual authentication. HTTP Digest is not as secure as TLS. The SCS logs into the Intel AMT computer with the username and password and provisions the following required data items:

- New PPS and PID (for future setup and configuration)
- TLS certificates
- Private keys
- Current date and time
- HTTP Digest credentials
- HTTP Negotiate credentials

The computer goes from the setup state to the provisioned state, and then Intel AMT is fully operational. Once in the provisioned state, the computer can be remotely managed.

Operating System Drivers

Within the operating system, AMT Unified driver must be installed to remove unknown devices in the Device Manager. Unlike previous version 3, 4 or 5 (which used to have two separate **HECI** and **LMS/SOL** drivers from customer re-install stand-point), they are both now in a common package called **AMT Unified Driver**. When the unified driver package is installed, it will take care of both PCI devices in the Device Manager.

AMT Unified Driver

The Intel AMT Serial-Over-LAN (SOL) / Local Manageability Service (LMS) driver is available on support.dell.com and on the ResourceCD under **Chipset Drivers**. The driver is labeled *Intel AMT SOL/LMS*. Install the driver by double-clicking on the installer.

Once you install the SOL/LMS driver, the **PCI Serial Port** entry becomes the **Intel Active Management Technology - SOL (COM3)** entry.

The Intel AMT Host Embedded Controller Interface (HECI) driver is available on support.dell.com and on the ResourceCD under **Chipset Drivers**. The driver is labeled *Intel AMT HECI*. Install the driver by double-clicking on the installer.

Once you install the HECI drivers, the **PCI Simple Communications Controller** entry becomes the **Intel Management Engine Interface** entry.

Intel AMT Web GUI

The Intel AMT WebUI is a Web browser-based interface for limited remote computer management. The WebUI is often used as a test to determine if Intel AMT setup and configuration was performed properly on a computer. A successful remote connection between a remote computer and the host computer running the WebUI indicates proper Intel AMT setup and configuration on the remote computer.

The Intel AMT WebUI is accessible from any Web browser, such as the Internet Explorer or Netscape.

Limited remote computer management includes:

- Hardware inventory
- Event logging
- Remote computer reset
- Changing of network settings
- Addition of new users

 NOTE: Information on using the WebUI interface is available on the Intel AMT website

Perform the following steps to connect to the Intel AMT WebUI on a computer that has been configured and set up.

1. Turn on an Intel AMT capable computer that has completed Intel AMT setup and configuration.
2. Launch a Web browser from a separate computer, such as a management computer on the same subnet as the Intel AMT computer.
3. Connect to the IP address specified in the MEBx and port of the Intel AMT capable computer. (example: `http://ip_address:16992` or `http://192.168.2.1:16992`)
   - By default, the port is 16992.

     NOTE: Use port 16993 and https:// to connect to the Intel AMT WebUI on a computer that has been configured and set up in the Enterprise mode.

   - If DHCP is used, then use the fully qualified domain name (FQDN) for the ME. The FQDN is the combination of the host name and domain. (example: `http://host_name:16992` or `http://system1:16992`)
4. The management computer makes a TCP connection to the Intel AMT capable computer and accesses the top level Intel AMT-embedded Web page within the Management Engine of the Intel AMT capable computer.
5. Type the username and password. The default username is `admin` and the password is what was set during Intel AMT setup in the MEBx.
6. Review the computer information and make any necessary changes.

    NOTE: You can change the MEBx password for the remote computer in the WebUI. Changing the password in the WebUI or a remote console results in two passwords. The new password, known as the remote MEBx password, only works remotely with the WebUI or remote console. The local MEBx password used to locally access the MEBx is not changed. You have to remember both the local and remote MEBx passwords to access the computer MEBx locally and remotely. When the MEBx password is initially set in Intel AMT setup, the password serves as both the local and remote password. If the remote password is changed, then the passwords are out of sync.

7. Select **Exit**.

AMT Redirection Overview

Intel AMT makes it possible to redirect serial and IDE communications from a managed client to a management console regardless of the boot and power state of the managed client. The client need only have the Intel AMT capability, a connection to a power source, and a network connection. Intel AMT supports Serial Over LAN (SOL, text/keyboard redirection) and IDE Redirection (IDER, CD-ROM redirection) over TCP/IP.

Serial Over LAN Overview

Serial Over LAN (SOL) is the ability to emulate serial port communication over a standard network connection. SOL can be used for most management applications where a local serial port connection is normally required.

When an active SOL session is established between an Intel AMT-enabled client and a management console using the Intel AMT redirection library, the client's serial traffic is redirected through Intel AMT over the LAN connection and made available to the management console. Similarly, the management console may send serial data over the LAN connection that appears to have come through the client's serial port.

IDE Redirection Overview

IDE Redirection (IDER) is capable of emulating an IDE CD drive or a legacy floppy or LS-120 drive over a standard network connection. IDER enables a management machine to attach one of its local drives to a managed client over the network. Once an IDER session is established, the managed client can use the remote device as if it were directly attached to one of its own IDE channels. This can be useful for remotely booting an otherwise unresponsive computer. IDER does not support the DVD format.

For example, IDER is used to boot a client with a corrupt operating system. First, a valid boot disk is loaded into the management console disk drive. This drive is then passed as an argument when the management console opens the IDER TCP session. Intel AMT registers the device as a virtual IDE device on the client, regardless of its power or boot state. Both SOL and IDER may be used together since the client BIOS may need to be configured to boot from the virtual IDE device.

Intel Management and Security Status Application

Intel Management and Security Status (IMSS) is an application that displays information about a platform's Intel Active Management Technology (Intel AMT) and Intel Standard Manageability services.

The IMSS icon indicates whether Intel AMT and Intel Standard Manageability are running on the platform. The icon is located in the notification area. By default, the notification icon is displayed every time Windows* starts.

The Intel Management and Security Status application has a separate version per every Intel AMT generation (4.x, 5.x, 6.x). This is to describe the Intel Management and Security Status application for Intel AMT generation 6.x.

Intel® Management and Security Status
General
Intel® AMT
Advanced
What is Intel® AMT?
Intel® Active Management Technology allows IT professionals to remotely discover, heal and protec your networked computer.
Fast Call for Help
Connection Status:
Connected
Get Technical Help
Intel® AMT detected that you are connected to the organization network. Click this button to notify IT that you need support.
Support session status
Remote Control Connection:
Disconnected
Stop Session
Disconnection hot key:
Ctrl+P
Change...
Media Redirection:
Disconnected
Terminal and Keyboard Redirection:
Disconnected
System Defense
Status:
Not activated
Learn more
OK
Cancel
Apply

NOTE: When the user logs on to Windows the Intel Management and Security Status application may start automatically. The icon will be loaded to the notification area only if Intel AMT or Intel Standard Manageability is enabled on the platform. If the Intel Management and Security Status application is started manually (via the Start menu), the icon is loaded even if none of these technologies are enabled, as long as all the drivers have been installed.

NOTE: The information displayed in the Intel Management and Security Status is not shown in real time. The data is refreshed at different intervals.

* Information on this page provided by Intel.

Troubleshooting

This page describes a few basic troubleshooting steps to follow if problems are experienced with the Intel AMT configuration. Check DSN for more troubleshooting options.

Return to Default

Return to Default is also known as un-provisioning. An Intel AMT setup and configured computer can be un-provisioned using the **Unconfigure Network Access** option on the ME General Settings screen.

Follow the step below to un-provision a computer:

1. Select **Un-Provision** and then select **Full Un-provision**.

This option returns all Intel AMT configuration settings to factory defaults and does not reset ME configuration settings or passwords. An un-provisioning message displays after about one minute. After the un-provisioning completes, control is passed back to ME General Settings screen.

1. Select **Return to previous menu**.
2. Select **Exit** and then press <y>. The computer restarts.

Firmware Flash

Flash the firmware to upgrade to newer versions of Intel AMT. The automatic flash feature can be disabled by selecting **Disabled** under the **Secure Firmware Update** setting in the MEBx interface. If this setting is disabled, a firmware error message appears when flashing the BIOS.

Serial-Over-LAN (SOL) / IDE Redirection (IDE-R)

If you cannot use IDE-R and SOL, perform these steps:

1. At the initial boot screen, press *<Ctrl><p>* to enter the MEBx screens.
2. A prompt for the password appears. Type the new Intel ME password.
3. Select **Unconfigure Network Access**. Press *<Enter>*.
4. Select **Y**. Press *<Enter>*.
5. Select **Full Unprovision**. Press <Enter>.
6. Reconfigure the settings under the **AMT Configuration** menu option shown here.